Results of ECC Broadband Aggregation and Adoption Toolset (BAAT) program for the City of Buffalo NY 2021

September 30, 2021

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Section 1. Introduction

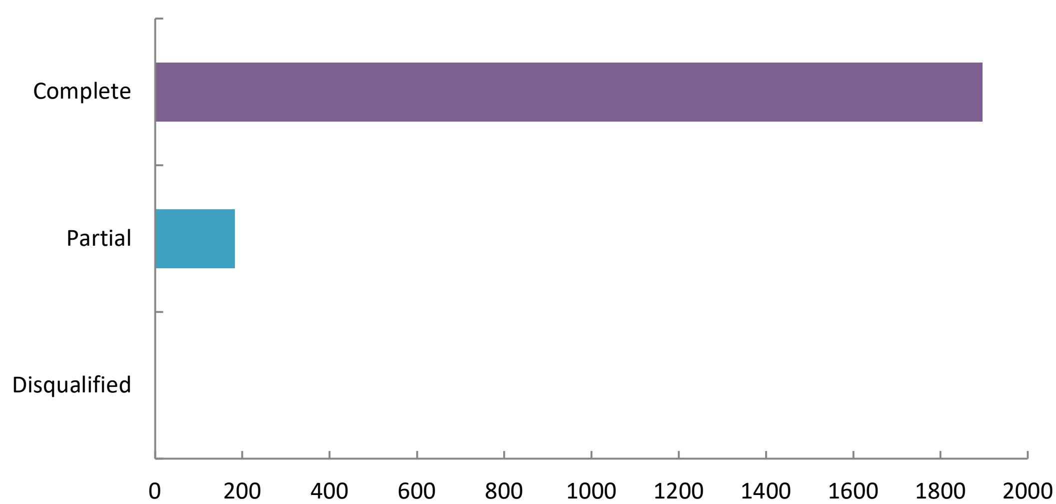
ECC Technologies worked with the Buffalo Urban Renewal Agency (BURA) team to develop and deploy ECC's Broadband Availability and Assessment Toolkit in the City. This report summarizes the program and the results of the program.

1.1 DEMAND AGGREGATION AND ASSESSMENT

ECC's Broadband Availability and Adoption Toolset (BAAT) is a web-based application which allows for the documentation of demand for broadband services within the City of Buffalo with marketing components, data, and mapped responses all captured within a single portal.

The BAAT included a speed test component, which helps in the assessment of the identification of "speeds" of non-mobile respondents who are online via narrowband (dialup, DSL, cellular hotspot, fixed wireless et al), broadband, or those who are accessing the device via a mobile device.

The BAAT program allowed for customized questions in the assessment section for both residential and business respondents, as well as respondents with service vs. those without. The BAAT allowed for near real-time reporting to be produced on survey responses, including geographic locations.



Response Completion	Count	Percent
Complete	706	86.2
Partial	113	13.8
Disqualified	0	0
Totals	**819**	

1.2. HIGHLIGHTS.

The initial question on the survey assessment was a required component and requested the physical address of the respondent. This is required because it allows for the ECC team to geolocate and map the responses.

While any response to questions in the survey instrument can be mapped, the key purpose of mapping during the BAAT program is to evaluate the physical location of responses to ensure input from all locations within the City.

More than 94% of our respondents were residential (771) which is a slightly higher number than average for ECC's BAAT programs, while 44 non-residential respondents filled in some or all of the questionnaire.

Through this survey, residents had a variety of methods with which to communicate with ECC or with the City including direct email, a "Contact Us" from on the site, and a dedicated phone number. Contained within the questionnaire itself is the capability for a respondent to input criteria into the survey form in a free form text format.

Appendix A includes direct feedback from respondents to the City of Buffalo campaign and contains over a significant number of comments.

1.3. OVERALL ASSESSMENT.

ECC developed a specific project plan for the BAAT program and provided suggestions / recommendations to the BURA and City teams based on other campaigns executed with ECC clients.

During the course of the project, the ECC and BURA teams met at least every other week to review activities and results. Periodically, the meetings would include maps of the City to identify the geographic responses in a graphical format.

The key to any successful BAAT or other outreach program, is the capability of the sponsoring organization to continually promote the project. This constant engagement represents the best opportunity to ensure that all residents within the corporate limits can participate.

The BURA team utilized a variety of methods to publicize the data including outreach through the City’s public relations office, links on the City’s website, notifications on property tax bills, and even person to person canvasing in certain neighborhoods.

Candidly, the number of responses derived from the BAAT program will provide a higher degree of value from the qualitative aspects – i.e. the comments posted by residents. The statistical responses are important, but the limited number of responses do not return the significant level of value desired by ECC.

1.4. RESPONSE TYPE.

There are four types of responses:

- Complete
- Partial
- Disqualified
- Quarantined

A complete response is defined as one in which each and every question in the survey has been answered excluding free form text entry questions.

A partial response is defined as one in which at least one question, which is not a free form text question, has not been answered. Any partial response will include the required fields. The results to all questions answered in a given session are recorded. This results in the total number of responses differing among questions.

There are no disqualified responses because questions which could create such a definition were not incorporated within the survey instrument.

There are not quarantined responses since the survey instrument did not incorporate questions which required input other than that specifically allowed. A prime example would be a question which would request the upload of a file in order to complete the question response.

1.5. OTHER INFORMATION.

Section 4 of this document will detail the key analytics of the Internet site (buffalobroadband.com) including site visits, traffic sources, time on page, types of access devices etc.

Section 3 of this document provides an overview of the mechanics of the BAAT program.

1.6. INTERNET ACCESS WITHOUT BROADBAND.

The responses in this section include those who do not have Internet access, or who utilize DSL, dialup, cellular hotspot, or satellite services.

A total of **40 respondents or 5.3%** reported having no access to broadband – in other words – no service.

Adding in narrowband services including dialup, satellite, cellular hotspot and fixed wireless, the **total number of unserved and underserved increases to 112 or about 14.9%** of residential respondents. Fiber and coaxial delivered Internet services to 84% of the respondents with cable accounting for 585 households and fiber a total of 44.

Only 51 residential respondents reported having access to more than one provider.

Adoption of Internet access often hinges on affordability for a user. In Buffalo, almost 50% of residential respondents are paying **more than $75** per month for access which is a higher percentage than other surveys in central New York.

10.3% of households are paying between $25 and $75 per month while only 3.9% or 20 households reported paying less than $25 per month.

A total of **147 or about 23.6% of respondents reported being unable to purchase the speed they required** while another 23.9% or 149 respondents, indicated they did not know if they could purchase the throughput they required.

The survey included an additional option which allowed a respondent to reply "Yes I can purchase the speed I need but…" with a text-based option. 16.7% of responses – a total of 104 – chose this option and provided comments. The text answers to this question are also included in the comments section, but the overriding comments are focused on the expense of Internet services.

A very high proportion of households said they would not be willing to pay any more for improved Internet services – 410 homes or 62.3% of the responses to this question. 42 households (6.4%) indicated that would be willing to pay $5 more per month, while 9.6% or 63 households said $10.00 more would be what they were willing to pay.

79 households indicated their willingness to spend $20 or more per month for significantly improved service. The comments in the response section detailed further in the report support these findings: intermittent or poor service at high prices is a common frustration.

There were 34 responses to the question asking why the respondents had no internet access. More than half – 61.8**% of the responses or 21 households – reported that broadband was too expensive**. Only 4 households reported that Internet access was not available.

1.7 USES OF BROADBAND.

Three questions were asked of respondents who reported having no broadband service. These questions related to potential personal uses of broadband: were there issues relating to accessing health care [thinking in terms of telehealth and remote care], work, or school.

While 75% of the respondents who reported no Internet access were familiar with telemedicine, no one reported issues with obtaining medical care based on either location or cost. This question is asked as a simple determinant related to telehealth services delivery. This percentage differs from some other BAAT campaigns in other areas of the country, and probably reflects the availability of health care facilities and providers within the city, and Erie County, and proximity to larger teaching hospitals and trauma care.

When examining working from home, 31.3% or 10 households of the responses said that no one in the household worked from home – however of the remaining group, **40.6% of the total reported having trouble completing work from home – a total of 13 households** – due to Internet access issues.

The numbers were slightly different for the question about difficulties with schoolwork primarily due to the classification of answers. Over 43% of respondents indicated no one in the household is in school. Of the remainder, 34.4% or 11 households reported issues – 21.9% or 7 households report no issues.

By an overwhelming amount, adults ages 26-65 were named as the primary users of Internet – 79.4%. Remembering that multiple answers were allowed for this question, 38.5% indicated that children would be the primary users.

1.8 VALUE OF BROADBAND.

A multi-tiered question asked Buffalo respondents to express their perception of the value of Internet access to different parts of their life.

The highest responses from those who do not currently have broadband– **over 83%** - responded that Internet Access was *Very Important* to **stay in touch** and to **stay informed**.

Quality of life value of Internet access was more than 75%, and questions about **healthcare, livelihood and education all registered above 45 %**. When adding in the category of *Somewhat Important* **all categories exceeded 60%** apart from the questions regarding education and healthcare.

When considering that specific question, **25.8% said the importance of Internet Access to pursue an education was Not Important or Not Applicable**. When reviewing this question more closely, an extremely high level of respondents reported having a minimum of a high school education. **Over 82% of the respondents have a two-year college degree or higher.**

1.9 COMMERCIAL.

Six non-residential respondents reported no Internet access. Of this small group**, only 2 responded that access was unavailable**. One respondent indicated that the Internet was too expensive for their business; another said there was no requirement for access; and two others only selected "Other" as their reason.

Thirty-two (32) non-residential respondents reported as active Internet subscribers. Six were unaware of the type of Internet serving their business, while **12 (37.5%) had sub broadband access**. The remainder, or 43.8% of the non-residential responses indicated cable as their provider.

A **full 1/3rd of non-residential users could not confirm** what the download or upload speeds or throughput are at their location.

Bundled services have a high take rate among these survey participants with the highest number of services including Internet, Phone, Email, TV, followed by managed services, network security and hosting.

Where potential issues arise for existing service providers, is in the area of **support quality. 67% (22) rated their vendor support as only Fair or Poor**. This is concerning when the very next question asked about whether the business utilized the internet to provide services to customers / clients or patients: almost 90% replied "Yes."

Of the total responses, 22 (67%) said they would pay no more per month for improved services, or they did not know, or were satisfied. Only 9 responses indicated the business would be willing to pay more on a monthly basis.

1.10 SERVICE PROVIDER OPPORTUNITIES.

The ability to recruit new providers into the County is enhanced by the results of the BAAT campaign. **Over 92%** of all residential respondents believe it is Important or Very important to have **a choice of providers**.

Almost **98% of these said they would purchase Internet** – another 51.6% added video or TV access, and a little more than 29% added home phone service. These responses are consistent with most BAAT program results in New York.

These numbers could help a service provider in developing an economic model to determine if they can offer these services in a profitable and sustainable manner.

1.11 COMMUNITY SUPPORT.

A surprising response was to the question regarding being a "Champion" for improved broadband. Nearly **19.8%** (133 responses) of the respondents **responded "Yes"** when asked if they would be willing to be a champion for improved internet access' while another **86 individuals or 12.4% asked for the city to "…tell them more**."

1.12 SUMMARY.

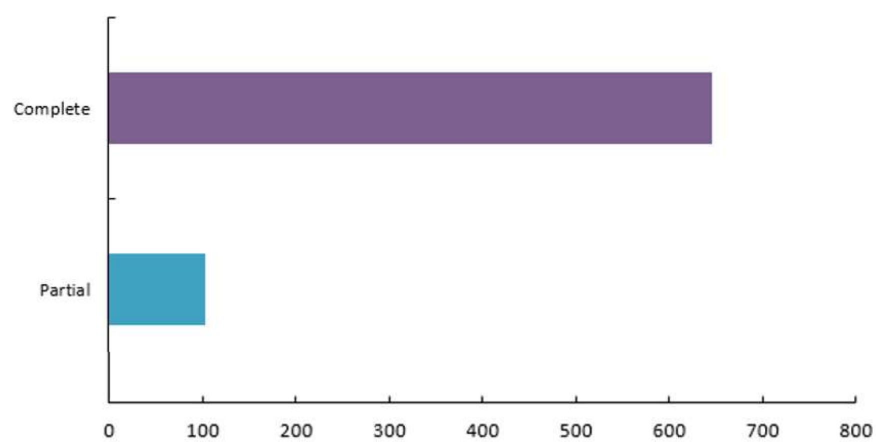
When combined with the City of Buffalo infrastructure inventory which includes additional analysis related to the FCC assessment of broadband availability and other metrics, the results of the BAAT survey produce the most compelling picture in the comments portion of the survey instrument.

The response maps do not indicate significant geographic disparity in responses and appear to draw from various areas of the city.

The Speed Tests are evaluated separately from the overall survey to examine geographic locations where sub broadband speeds can be observed.

On a consistent basis, it is difficult to correlate the results between the speed test and the survey. This results from many online responses which are completed at work or from a cellular phone where the speed test results are not relevant in context.

Respondents in the City, though fewer in number than was anticipated, have completed a high percentage of each survey than many of areas in which ECC has worked. Significant value will be gained as the population learns more about the advantages of broadband in supporting improved access to community services.



Value	Count	Percent
Complete	706	86.2
Partial	113	13.8
Disqualified	0	0
Totals	**819**	

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Section 2. Individual Question Responses

2.1 INITIAL CLASSIFICATION.

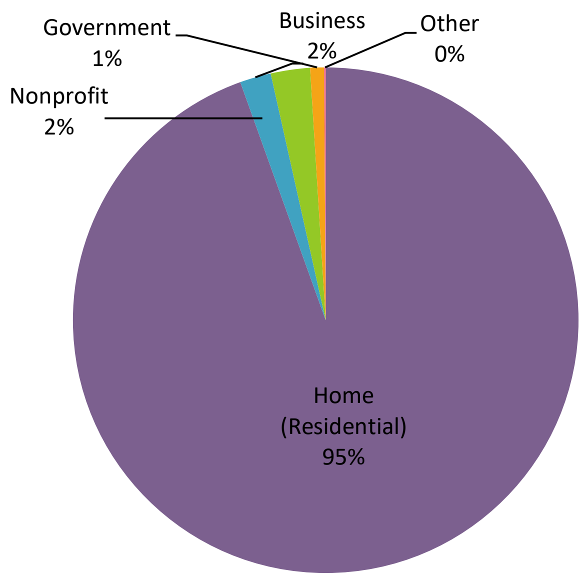
1.Is this address in Buffalo for your home (permanent or seasonal) or is this address NON-residential (business, non-profit, government or other)?

This question represents the first logical branch in the assessment. The response is binary and is interpreted as “Home” or residential or not home (“Business”, “Nonprofit”, “Government”, “Other”).

The result of the response to this question is held to determine the logic branching, pending the answer to the next question in the series.

That question is “What Type of Access…” is at this location. The answers to the two questions determine which of the four main logic branches will be followed by the respondent.

1.Is this address in Buffalo for your home (permanent or seasonal) or is this address non-residential (business, non-profit, government or other)?



Value	Percent	Count
Home (Residential)	94.6%	771
Business	2.0%	16
Nonprofit	2.5%	20
Government	0.9%	7
Other	0.1%	1
	Totals	**815**

There are several intervening questions where the respondent is asked what type of home they are residing in and whether the own or rent the home. Those are demographic questions and are not a component of the survey logic.

6. What type of Internet access do you have at this home or seasonal address in Buffalo

This question is the second logical question and, in conjunction with the previous question, all responses are now segregated into:

- Residential with Internet Access (this question)
- Residential without Internet Access (this question)
- Non-Residential with Internet Access (next question)
- Non-Residential without Internet Access (next question)

The next several questions following this one will take each of the respondent types listed above through several questions focused specifically to the group. Following the last question in the group-specific series, all residential subscribers will then be taken through a limited number of demographic questions; likewise, non-residential subscribers are walked through a small series of firmographic questions.

At the end of the survey, all respondents are asked for comments, and for their willingness to be a “Champion” for Broadband. Those answering “Yes” or “Tell me more” are asked for contact information allowing City personnel to follow up with them and solicit their help and support.

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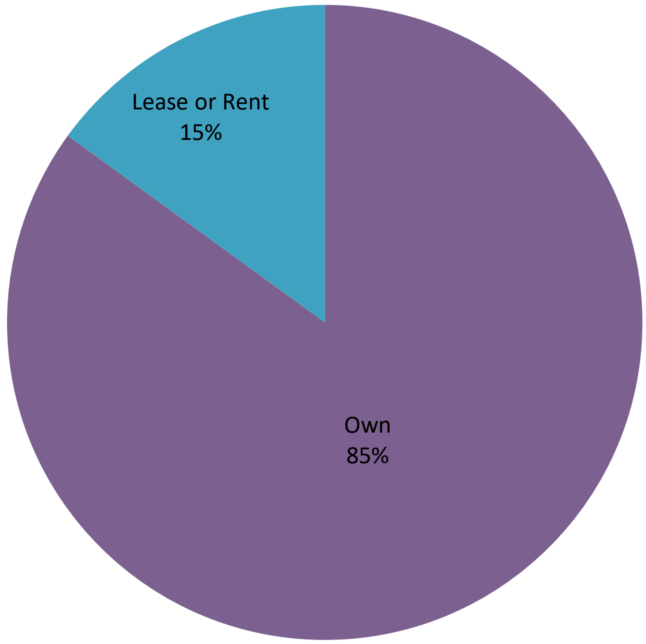
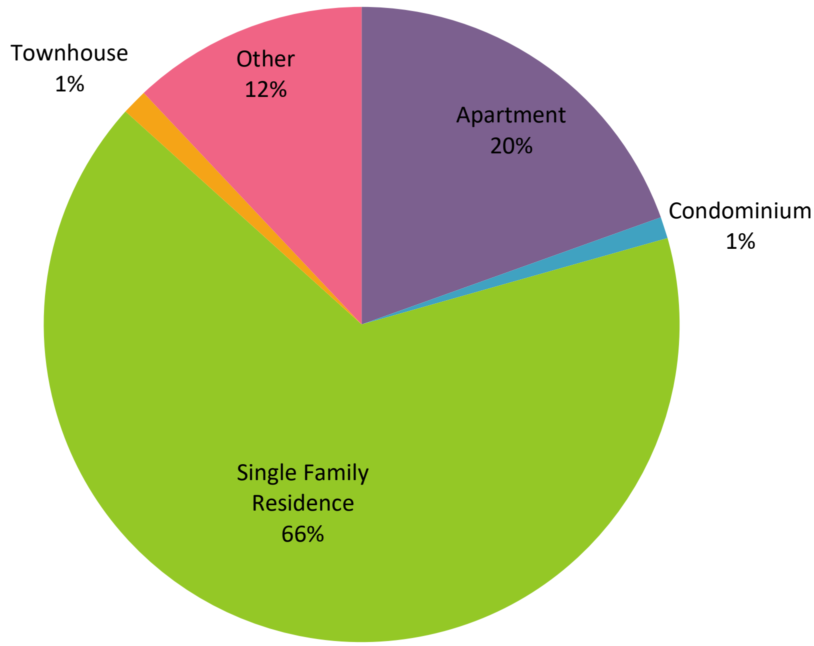
2.Do you own, lease or rent this property in Buffalo?



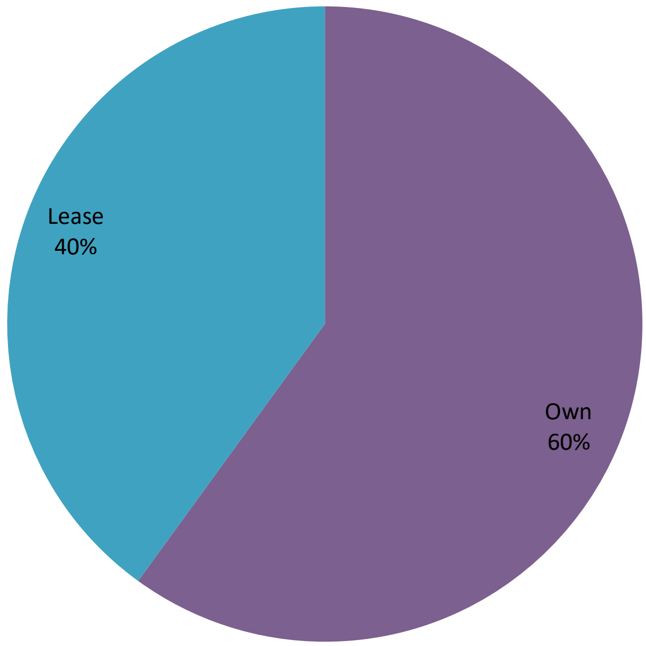
Value	Percent	Count
Own	85.0%	611
Lease or Rent	15.0%	108
	Totals	**719**

3.What type of residence is this?



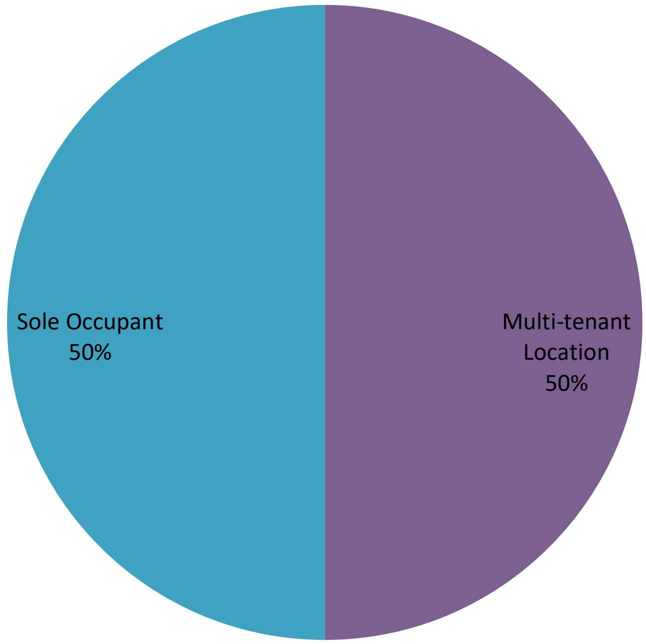
Value	Percent	Count
Apartment	19.5%	146
Condominium	1.1%	8
Single Family Residence	66.0%	493
Townhouse	1.3%	10
Other	12.0%	90
	Totals	**747**

4.If this is a business location, do you own or lease this space?



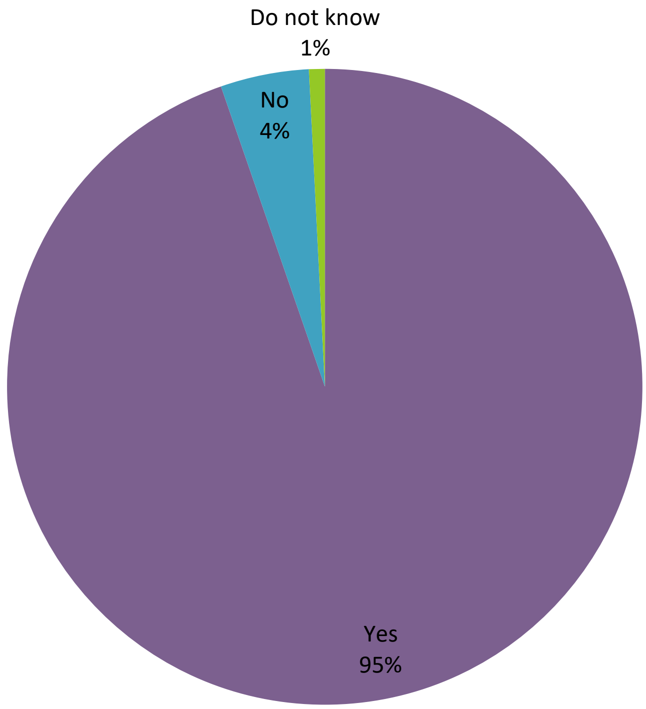
Value	Percent	Count
Own	60.0%	24
Lease	40.0%	16
	Totals	**40**

5.Is this space a multi-tenant space or are you the only occupant?



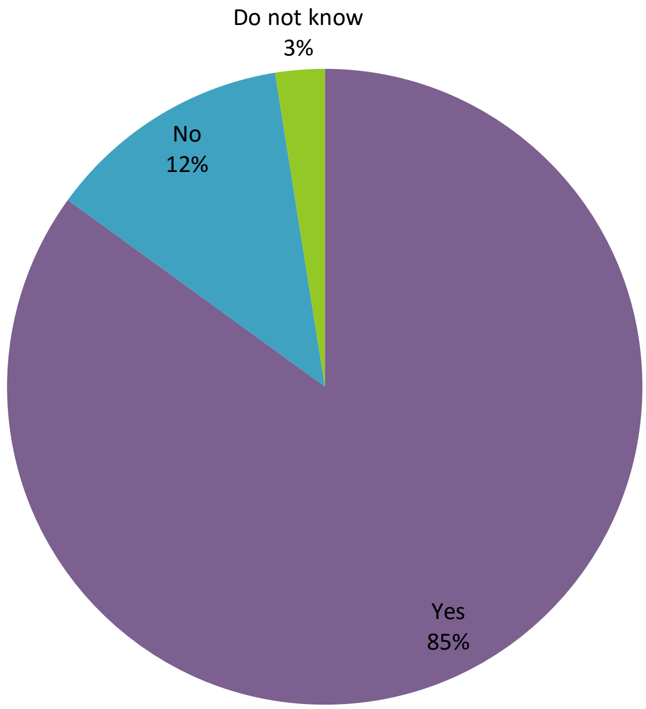
Value	Percent	Count
Multi-tenant Location	50.0%	20
Sole Occupant	50.0%	20
	Totals	**40**

6.Do you have Internet access at this home or seasonal address in Buffalo?



Value	Percent	Count
Yes	94.7%	709
No	4.5%	34
Do not know	0.8%	6
	Totals	**749**

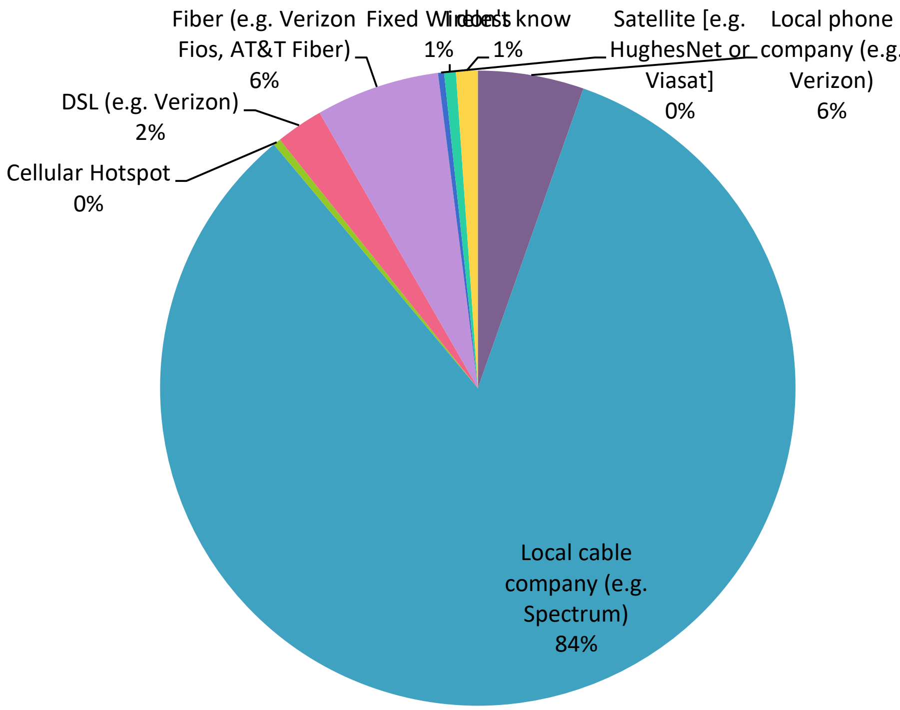
7.Non-Residential - Do you have Internet access at this non-residential address in Buffalo?



Value	Percent	Count
Yes	85.0%	34
No	12.5%	5
Do not know	2.5%	1
	Totals	**40**

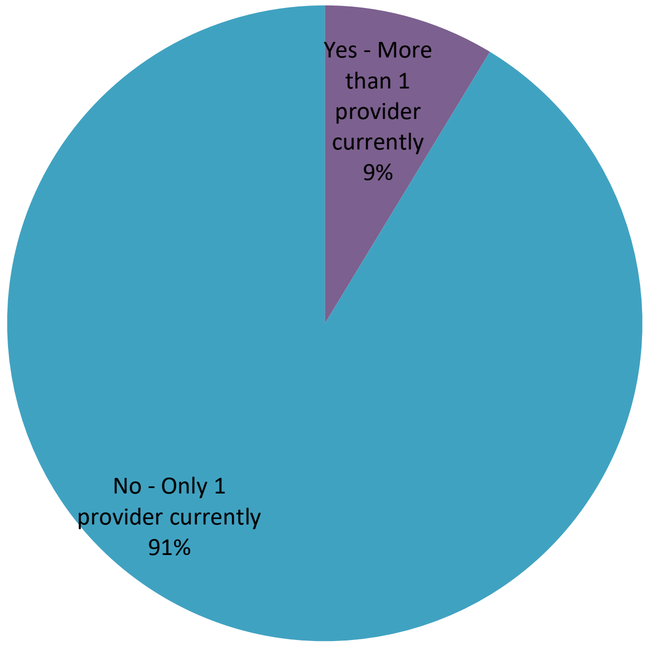
2.2 RESIDENTIAL – ACTIVE SERVICE

8.Who is your current Internet service provider?



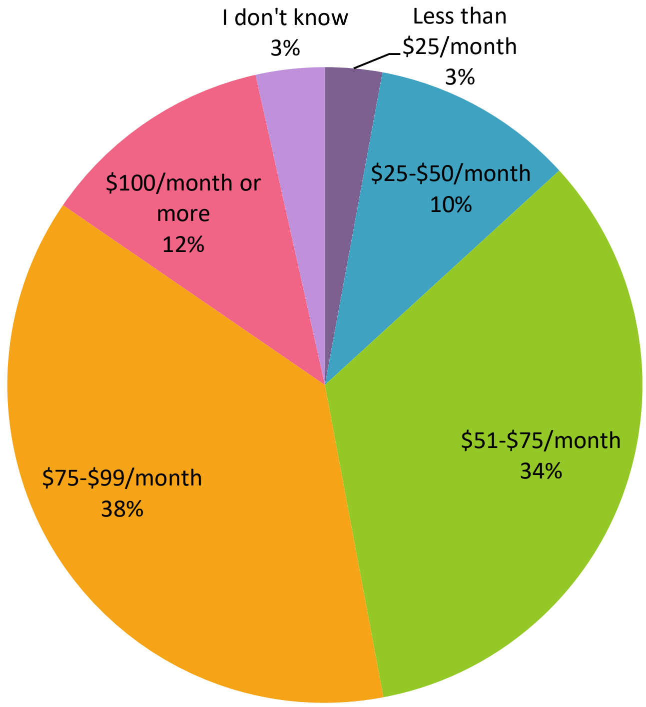
Value	Percent	Count
Local phone company (e.g. Verizon)	5.4%	38
Local cable company (e.g. Spectrum)	83.5%	585
Cellular Hotspot	0.4%	3
DSL (e.g. Verizon)	2.4%	17
Fiber (e.g. Verizon Fios, AT&T Fiber)	6.3%	44
Satellite [e.g. HughesNet or Viasat]	0.3%	2
Fixed Wireless	0.6%	4
I don't know	1.1%	8
	Totals	**701**

9.Do you have access to the Internet in your home from more than one provider (excluding cellular)?



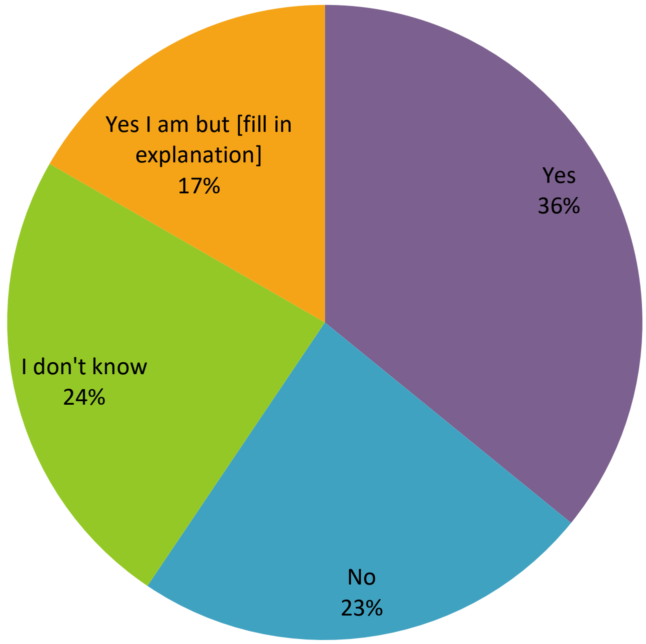
Value	Percent	Count
Yes - More than 1 provider currently	8.7%	51
No - Only 1 provider currently	91.3%	533
	Totals	**584**

11.How much are you paying per month just for Internet access only? If your service is bundled (cable TV, home phone, etc.) then please estimate the monthly cost.



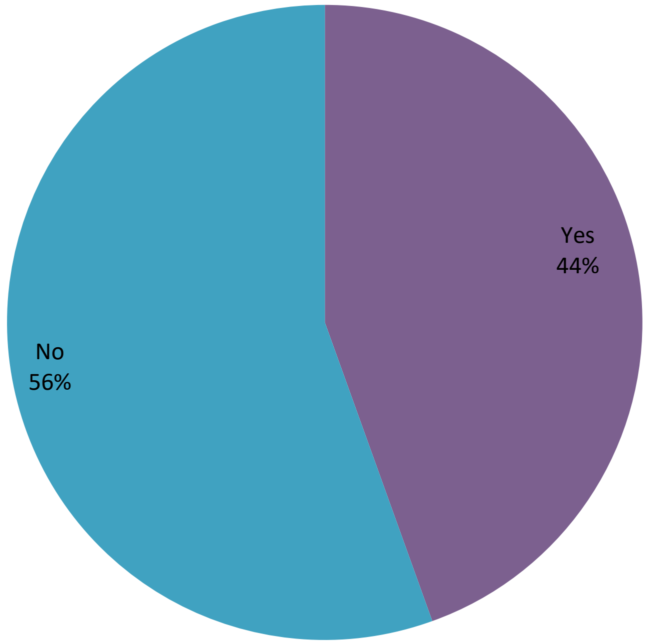
Value	Percent	Count
Less than $25/month	2.9%	20
$25-$50/month	10.3%	70
$51-$75/month	33.8%	230
$75-$99/month	37.5%	255
$100/month or more	11.9%	81
I don't know	3.5%	24
	Totals	**680**

12.Are you able to purchase the speed of broadband service that you need?



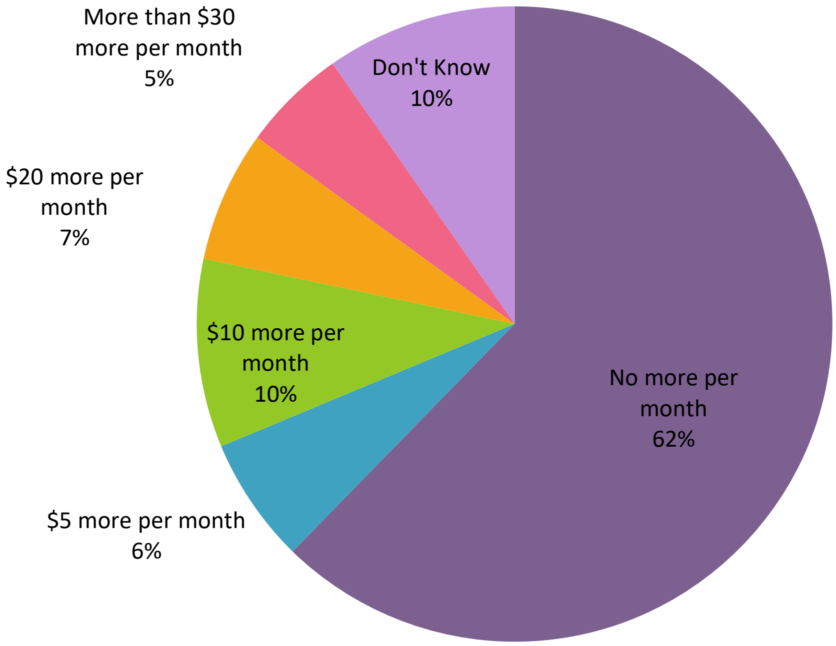
Value	Percent	Count
Yes	35.9%	224
No	23.6%	147
I don't know	23.9%	149
Yes I am but [fill in explanation]	16.7%	104
	Totals	**624**

14.Have you ever had a virtual doctors visit using your broadband / Internet service?



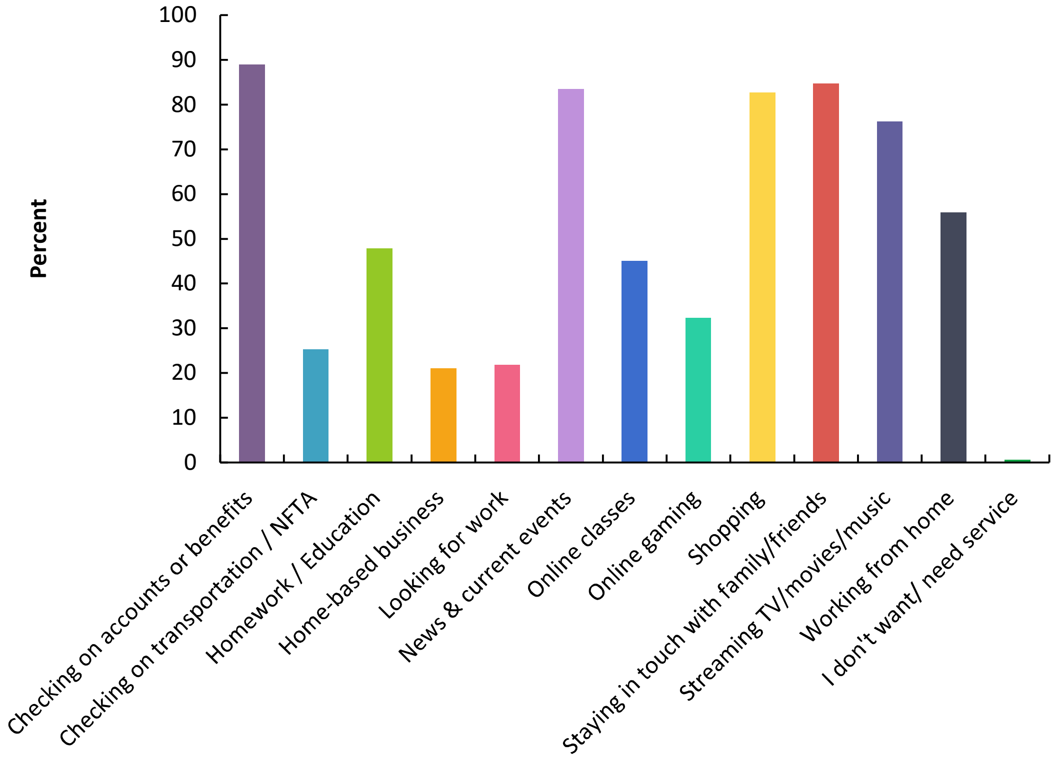
Value	Percent	Count
Yes	44.5%	270
No	55.5%	337
	Totals	**607**

15.How much more would you be willing to pay, per month, for significantly improved service?



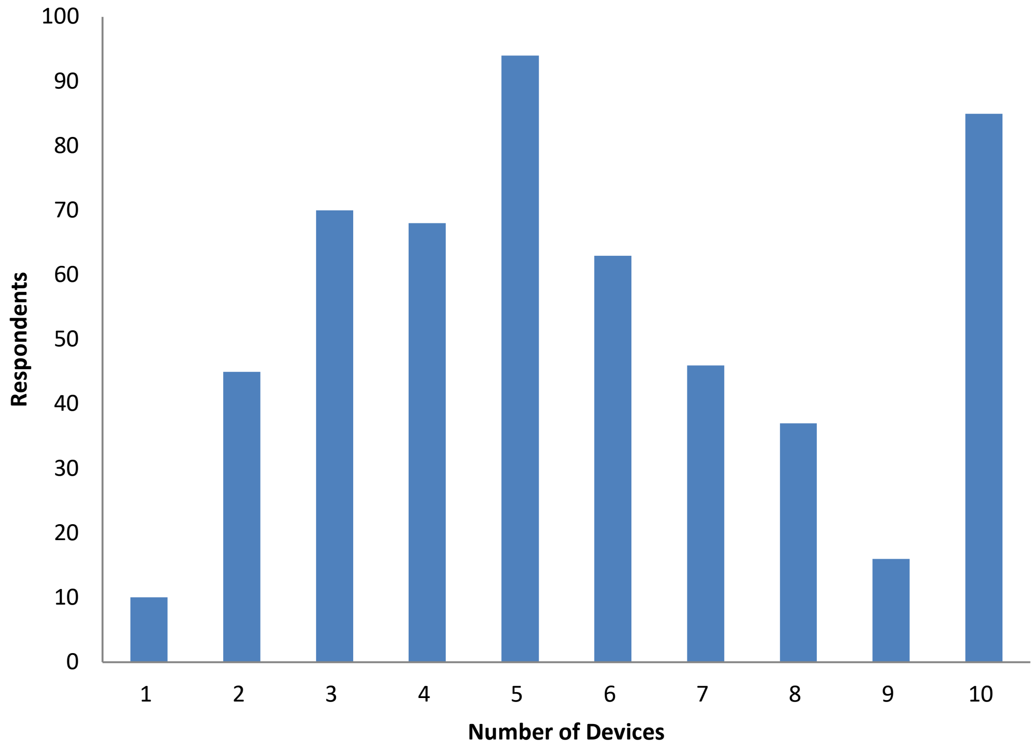
Value	Percent	Count
No more per month	62.3%	410
$5 more per month	6.4%	42
$10 more per month	9.6%	63
$20 more per month	6.7%	44
More than $30 more per month	5.3%	35
Don't Know	9.7%	64
	Totals	**658**

16.How do you use your broadband / Internet service today? (Please check all that apply.)



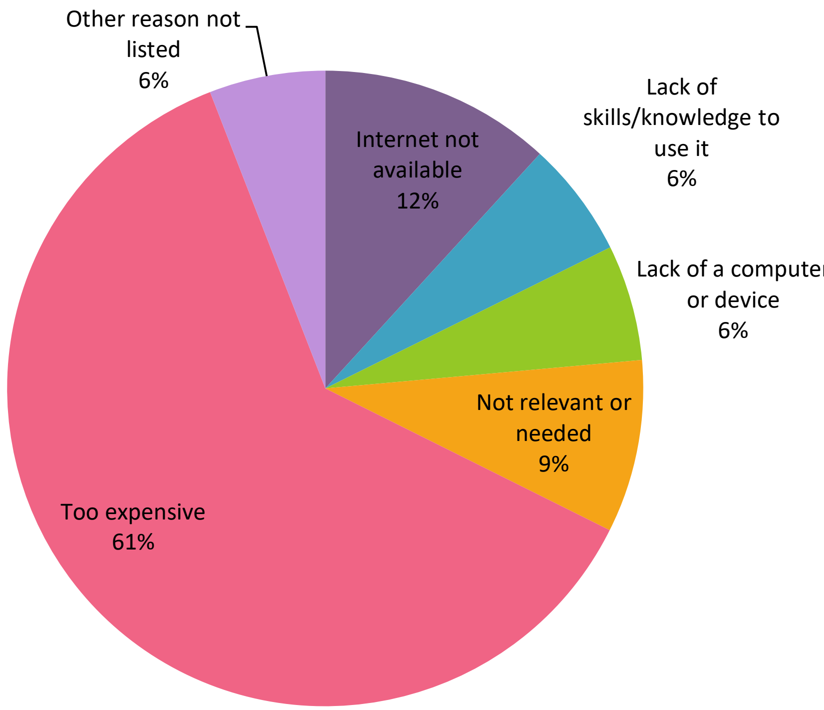
Value	Percent	Count
Checking on accounts or benefits	89.0%	577
Checking on transportation / NFTA	25.3%	164
Homework / Education	47.8%	310
Home-based business	21.1%	137
Looking for work	21.8%	141
News & current events	83.5%	541
Online classes	45.1%	292
Online gaming	32.4%	210
Shopping	82.7%	536
Staying in touch with family/friends	84.7%	549
Streaming TV/movies/music	76.2%	494
Working from home	55.9%	362
I don't want/ need service	0.6%	4

17.How many devices do you normally have connected to the Internet at any one time?



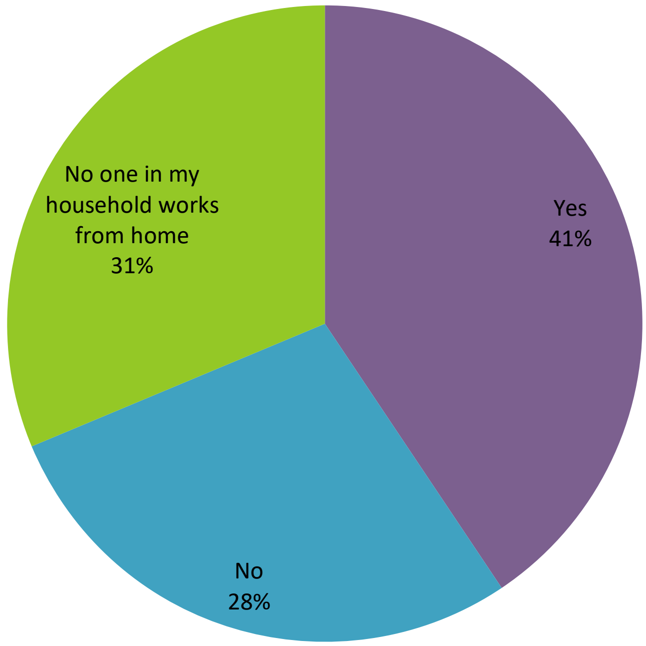
2.3 RESIDENTIAL – NO ACTIVE SERVICE

18.Please tell us the main reason you do not have Internet access at your address in Buffalo?



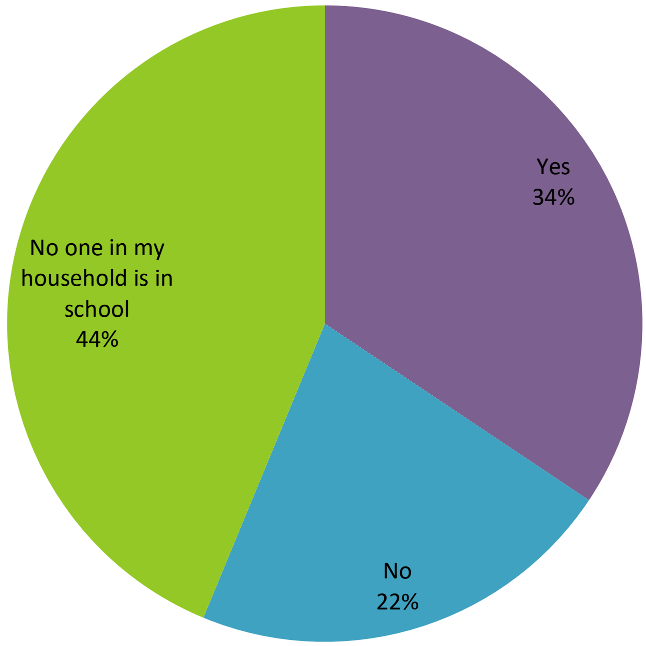
Value	Percent	Count
Internet not available	11.8%	4
Lack of skills/knowledge to use it	5.9%	2
Lack of a computer or device	5.9%	2
Not relevant or needed	8.8%	3
Too expensive	61.8%	21
Other reason not listed	5.9%	2
	Totals	**34**

19.Does anyone in your household have trouble completing work associated with their job [working from home] due to a lack of Internet access?



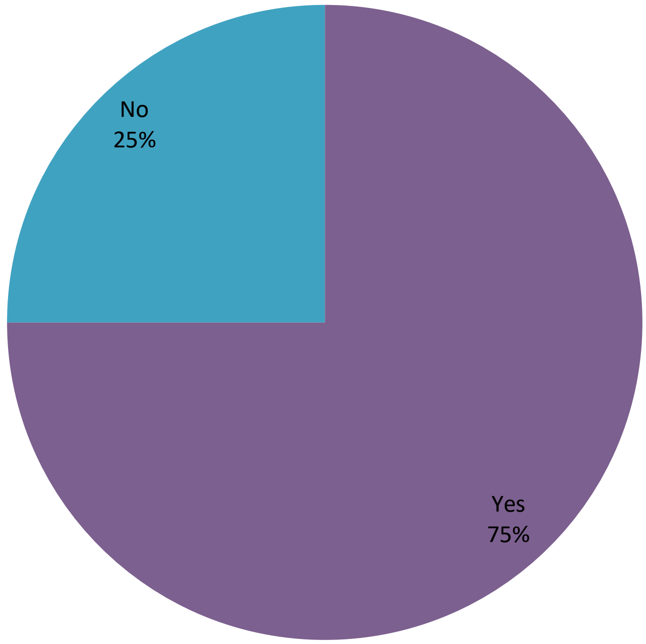
Value	Percent	Count
Yes	40.6%	13
No	28.1%	9
No one in my household works from home	31.3%	10
	Totals	**32**

20.Does anyone in your household have trouble completing school work [either homework or attending virtual school] due to a lack of Internet access?



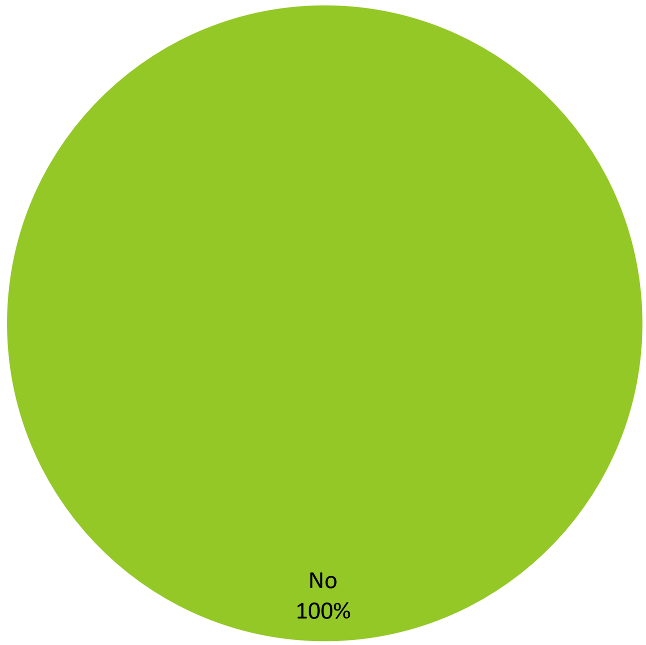
Value	Percent	Count
Yes	34.4%	11
No	21.9%	7
No one in my household is in school	43.8%	14
	Totals	**32**

21.Are you familiar with "telemedicine" or of a "virtual doctor visit?"



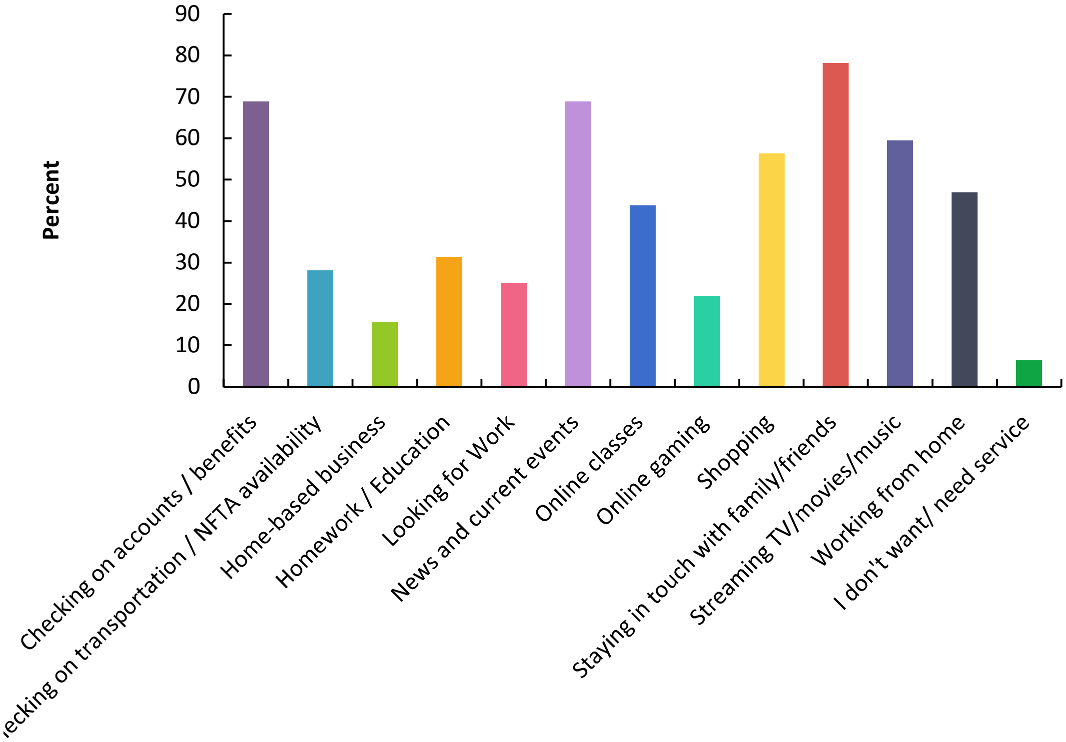
Value	Percent	Count
Yes	75.0%	24
No	25.0%	8
	Totals	**32**

22.Have you had problems seeing a doctor or other health professional because of your home or work location, or due the cost of an in-person visit?



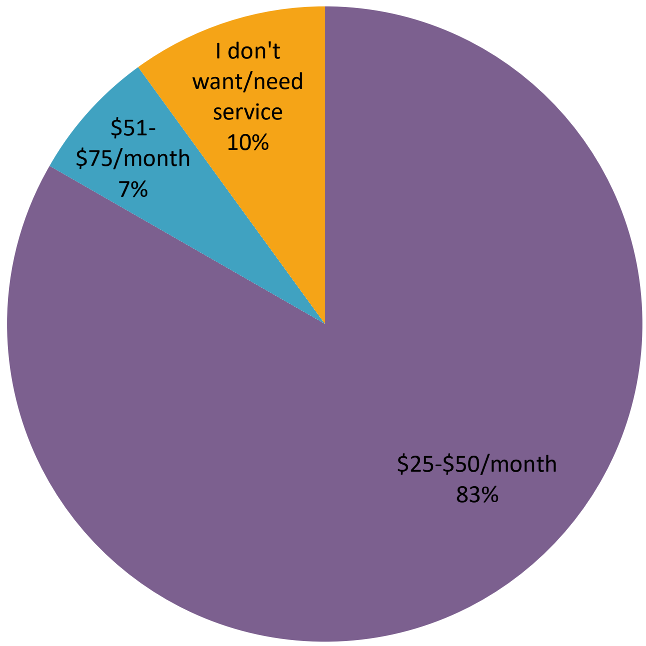
Value	Percent	Count
No	100.0%	7
	Totals	7

23.For what uses would you subscribe to a broadband / Internet service? (Please check all that apply.)



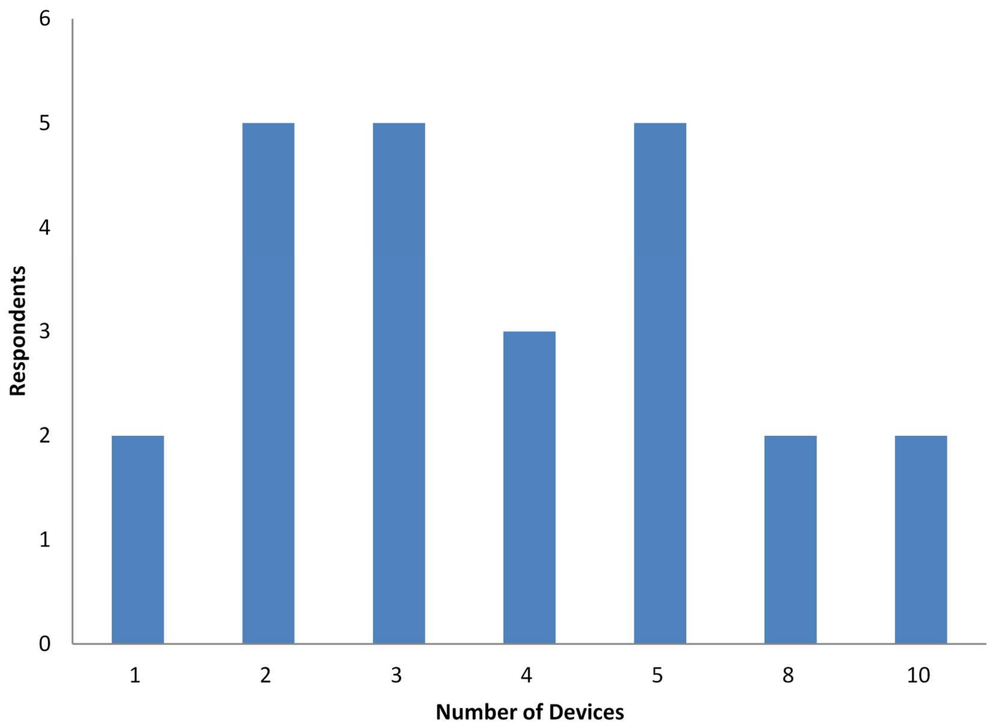
Value	Percent	Count
Checking on accounts / benefits	68.8%	22
Checking on transportation / NFTA availability	28.1%	9
Home-based business	15.6%	5
Homework / Education	31.3%	10
Looking for Work	25.0%	8
News and current events	68.8%	22
Online classes	43.8%	14
Online gaming	21.9%	7
Shopping	56.3%	18
Staying in touch with family/friends	78.1%	25
Streaming TV/movies/music	59.4%	19
Working from home	46.9%	15
I don't want/ need service	6.3%	2

24.How much would you be willing to pay for new Internet/broadband service?



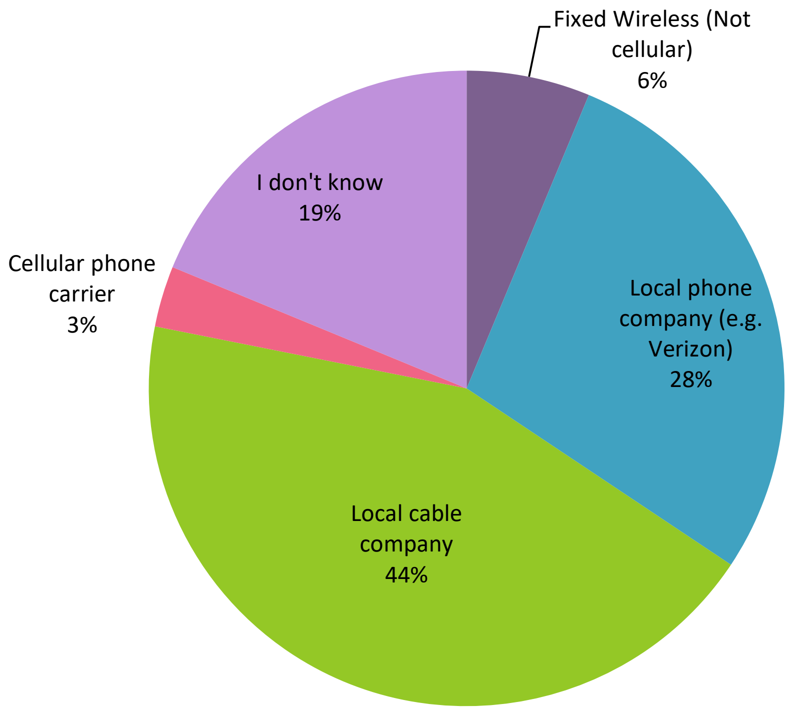
Value	Percent	Count
$25-$50/month	83.3%	25
$51-$75/month	6.7%	2
I don't want/need service	10.0%	3
	Totals	**30**

25.How many devices would you possibly connect to the Internet?



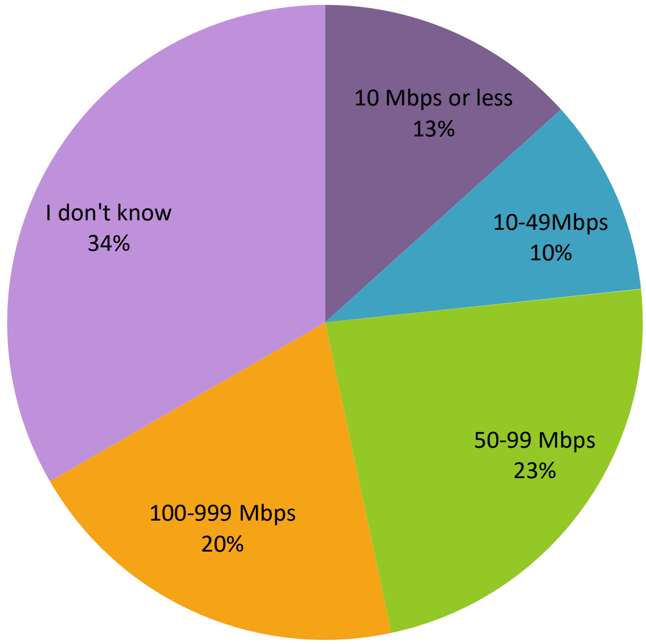
2.4 NON-RESIDENTIAL – ACTIVE SERVICE.

26. Non-Residential - Who is your current Internet service provider?



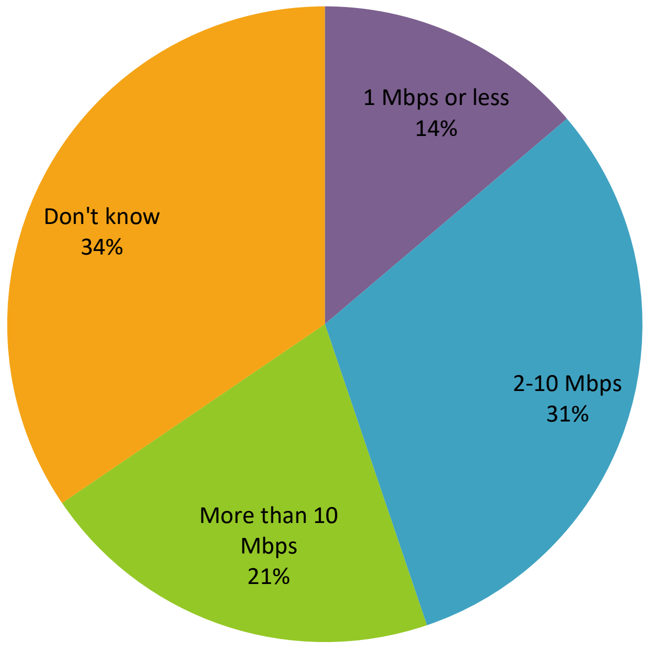
Value	Percent	Count
Fixed Wireless (Not cellular)	6.3%	2
Local phone company (e.g. Verizon)	28.1%	9
Local cable company	43.8%	14
Cellular phone carrier	3.1%	1
I don't know	18.8%	6
	Totals	**32**

28. Non-Residential - What is the current download speed or throughput at your location?



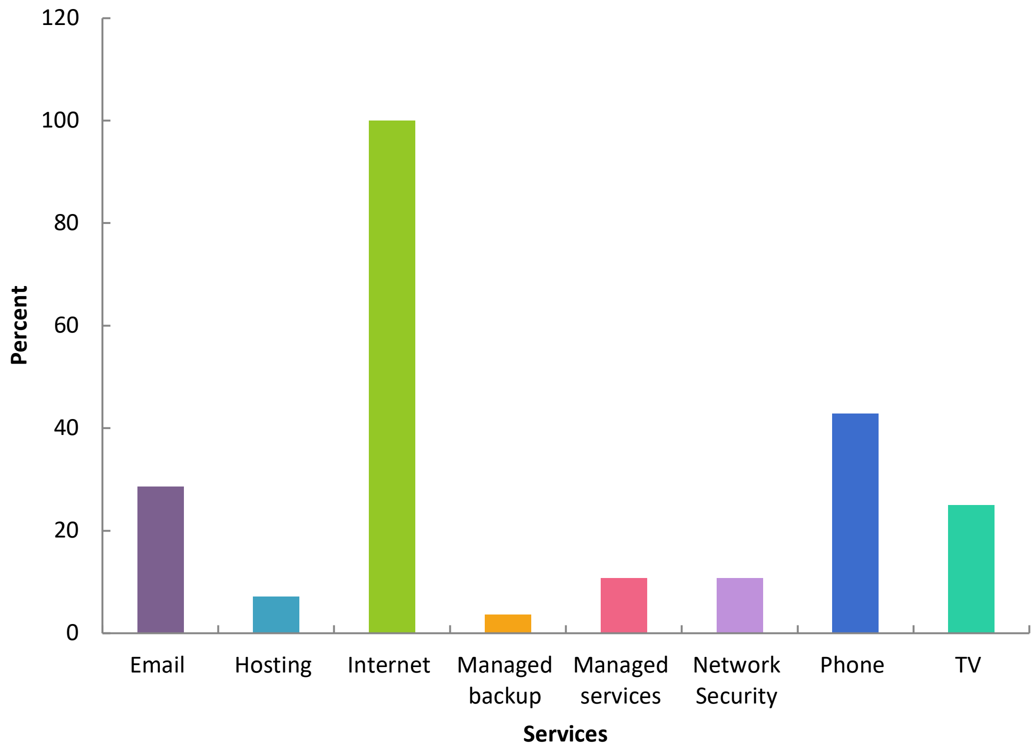
Value	Percent	Count
10 Mbps or less	13.3%	4
10-49Mbps	10.0%	3
50-99 Mbps	23.3%	7
100-999 Mbps	20.0%	6
I don't know	33.3%	10
	Totals	**30**

29. Non-Residential - What is your current upload speed at this location?



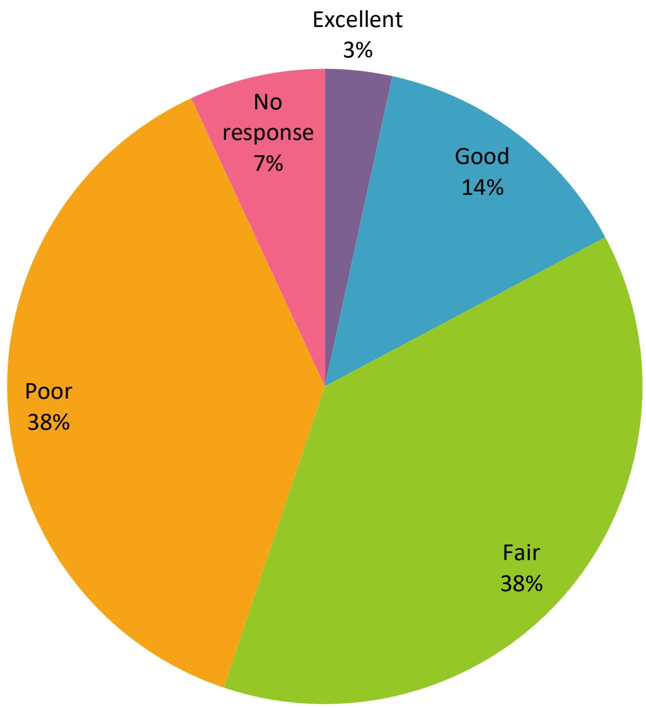
Value	Percent	Count
1 Mbps or less	13.8%	4
2-10 Mbps	31.0%	9
More than 10 Mbps	20.7%	6
Don't know	34.5%	10
	Totals	**29**

30. Non-Residential - What services do you receive from your provider? [Please click all that apply.]



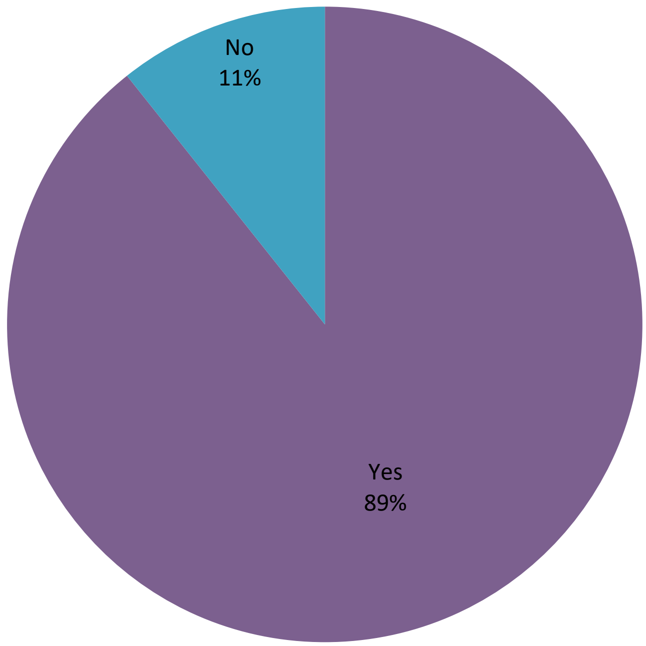
Value	Percent	Count
Email	28.6%	8
Hosting	7.1%	2
Internet	100.0%	28
Managed backup	3.6%	1
Managed services	10.7%	3
Network Security	10.7%	3
Phone	42.9%	12
TV	**25.0%**	**7**

31. Non-Residential - Please rate the quality of support from your provider.



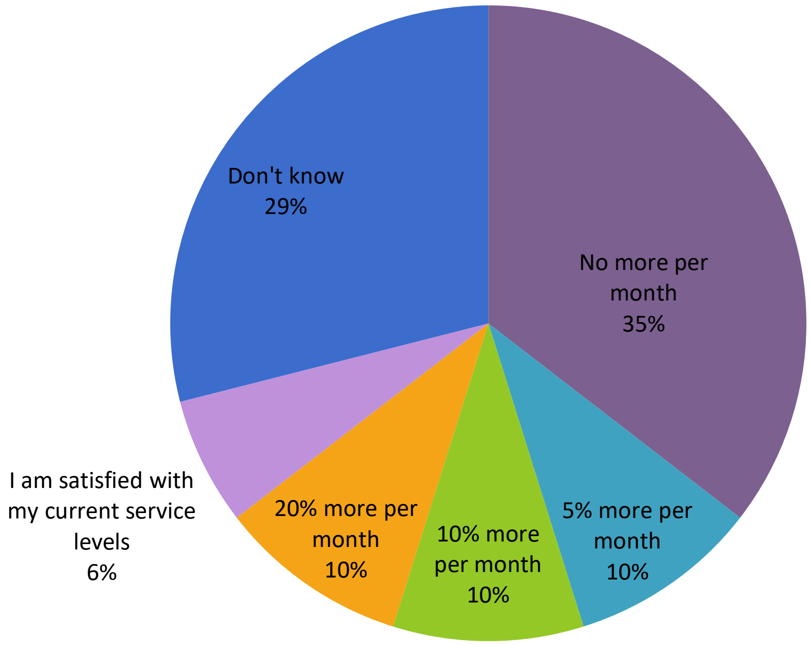
Value	Percent	Count
Excellent	3.4%	1
Good	13.8%	4
Fair	37.9%	11
Poor	37.9%	11
No response	6.9%	2
	Totals	**29**

32. Non-Residential - Do you provide services to your customers / clients / patients via the Internet?



Value	Percent	Count
Yes	89.3%	25
No	10.7%	3
	Totals	**28**

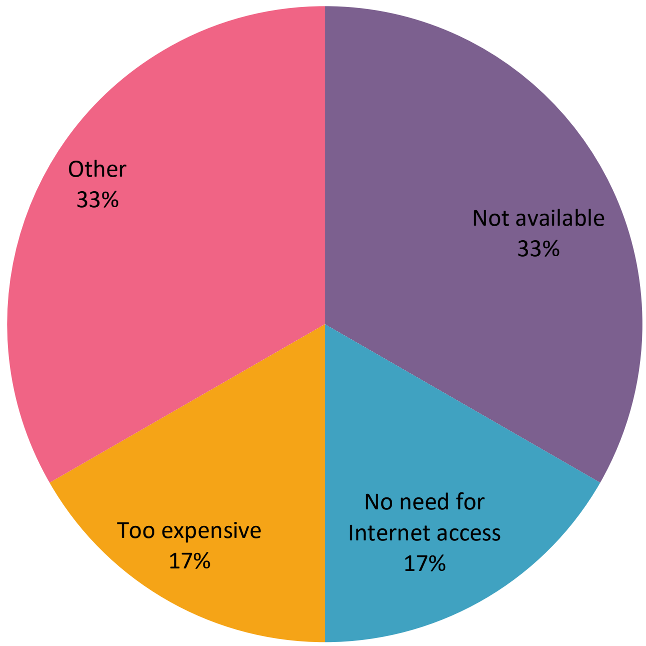
33. Non-Residential - How much more per month would you be willing to pay for significantly improved broadband service?



Value	Percent	Count
No more per month	35.5%	11
5% more per month	9.7%	3
10% more per month	9.7%	3
20% more per month	9.7%	3
I am satisfied with my current service levels	6.5%	2
Don't know	29.0%	9
	Totals	**31**

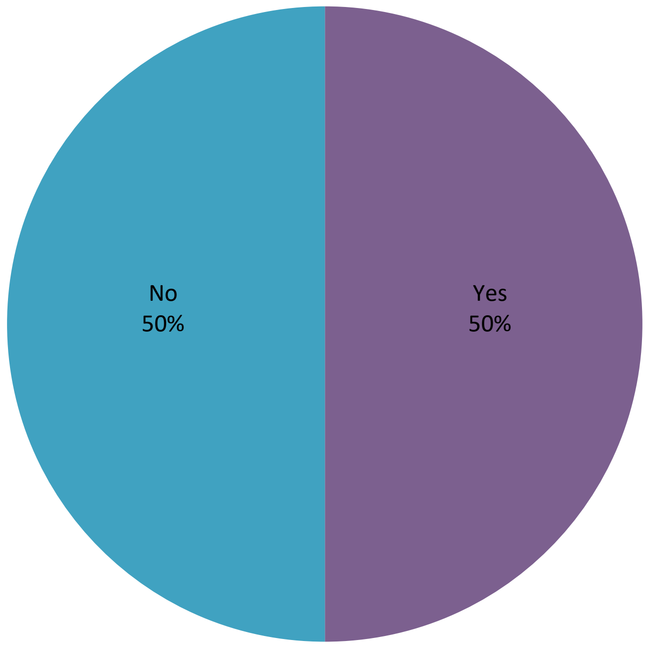
2.5 NON-RESIDENTIAL – NO ACTIVE SERVICE.

34. Non-Residential - Why do you not have Internet access at your business location in Buffalo?



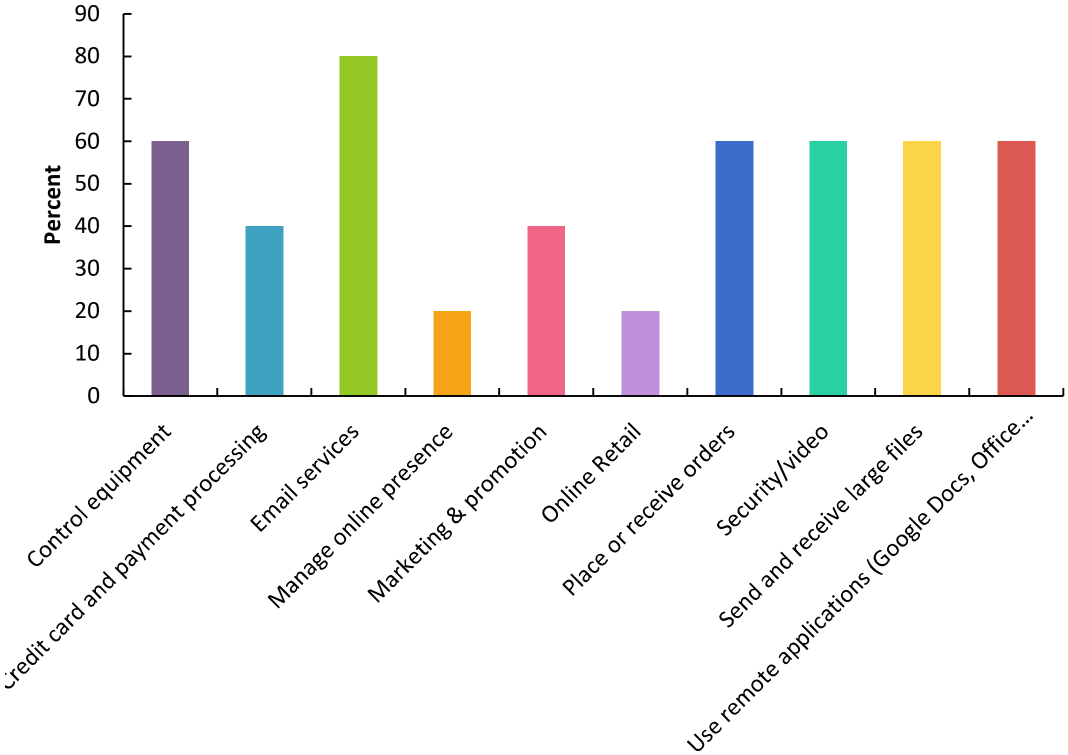
Value	Percent	Count
Not available	33.3%	2
No need for Internet access	16.7%	1
Too expensive	16.7%	1
Other	33.3%	2
	Totals	**6**

35. Non-Residential - Do you access the Internet for business use at another location?



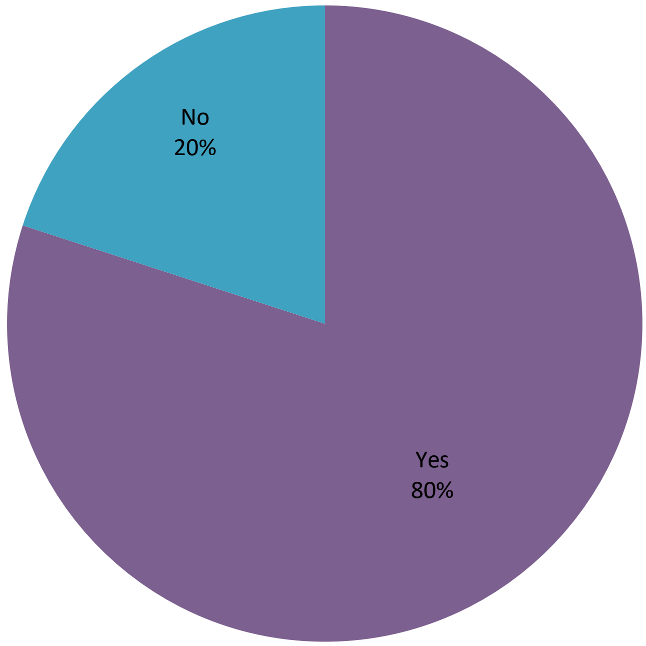
Value	Percent	Count
Yes	50.0%	3
No	50.0%	3
	Totals	**6**

36. Non-Residential - What would be the primary uses of broadband in your business? (Please check all that apply.)



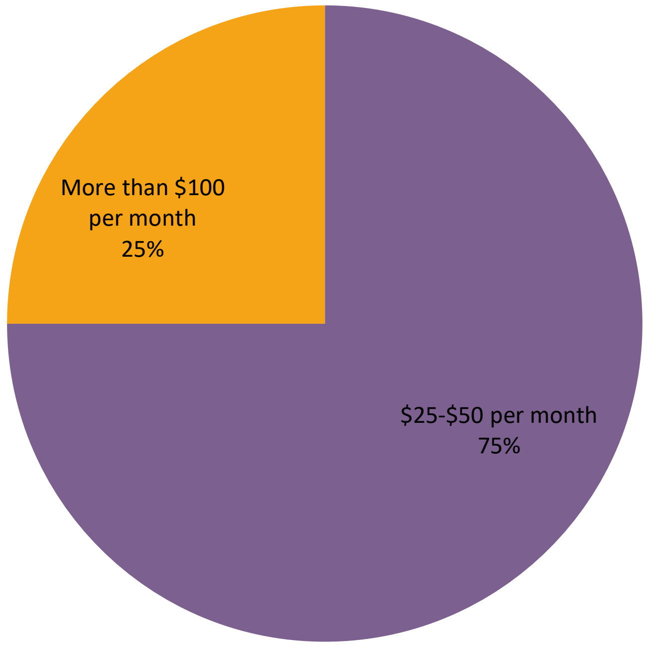
Value	Percent	Count
Control equipment	60.0%	3
Credit card and payment processing	40.0%	2
Email services	80.0%	4
Manage online presence	20.0%	1
Marketing & promotion	40.0%	2
Online Retail	20.0%	1
Place or receive orders	60.0%	3
Security/video	60.0%	3
Send and receive large files	60.0%	3
Use remote applications (Google Docs, Office Online, etc.)	60.0%	3

38. Non-Residential - Would broadband access enable you to be more competitive in your business?



Value	Percent	Count
Yes	80.0%	4
No	20.0%	1
	Totals	**5**

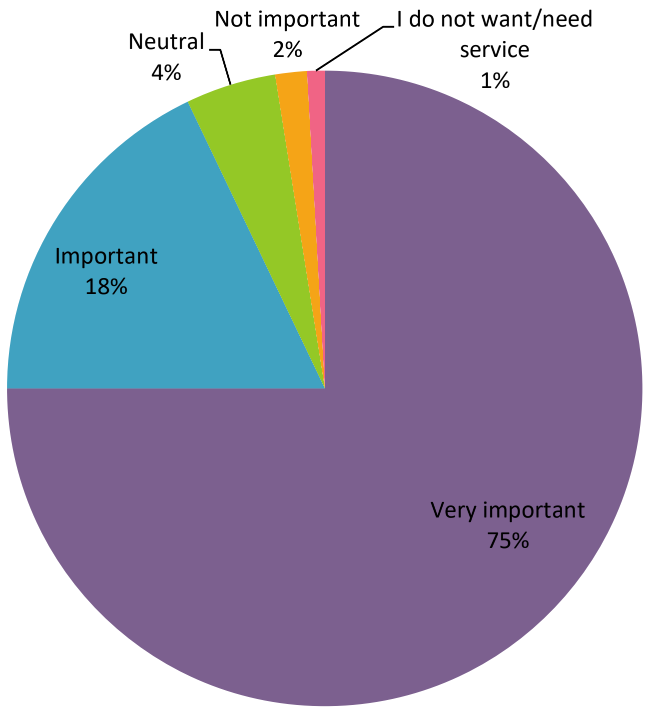
39. Non-Residential - How much would you be willing to pay for Internet service at this location in Buffalo?



Value	Percent	Count
$25-$50 per month	75.0%	3
More than $100 per month	25.0%	1
	Totals	**4**

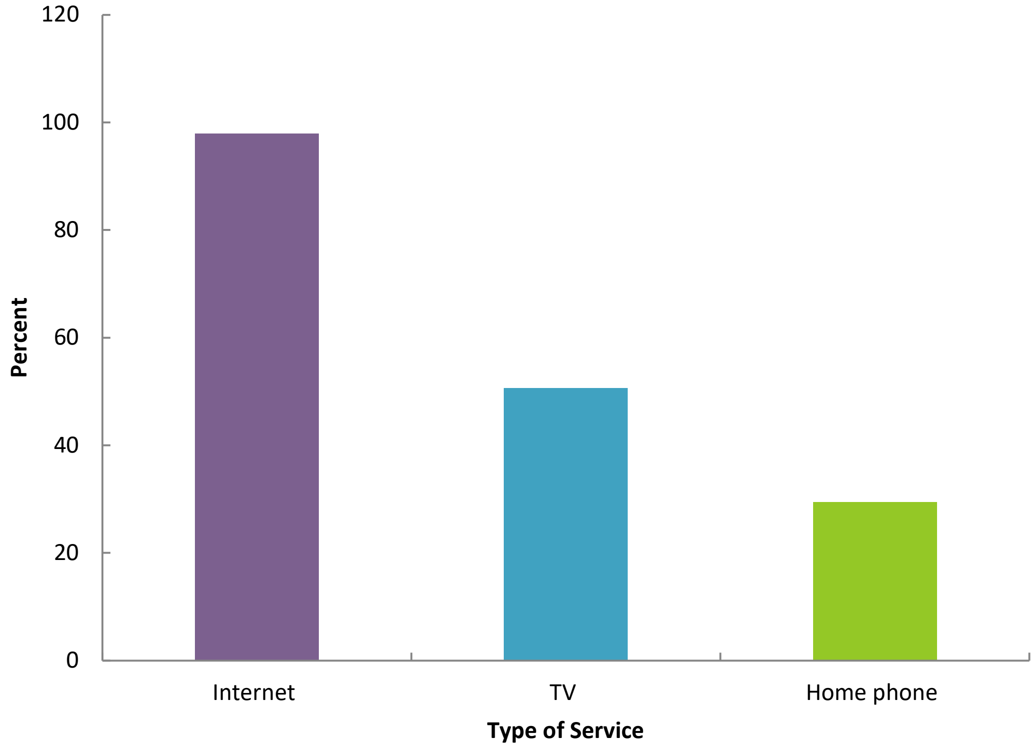
2.6 RESIDENTIAL – GENERAL & DEMOGRAPHICS.

40. How important is it to you to have a choice in providers?



Value	Percent	Count
Very important	75.0%	507
Important	17.9%	121
Neutral	4.6%	31
Not important	1.6%	11
I do not want/need service	0.9%	6
	Totals	**676**

41.Please check the services you would be interested in purchasing from a new service provider.

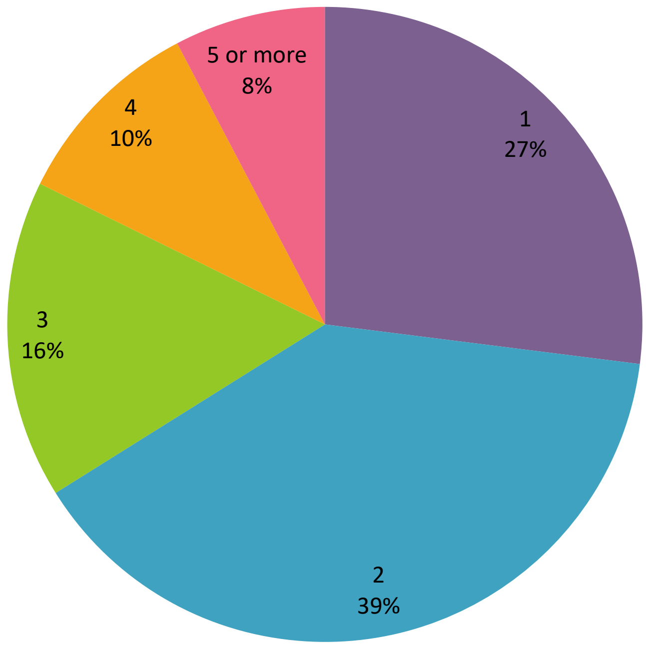


Value	Percent	Count
Internet	97.9%	668
TV	50.6%	345
Home phone	29.5%	201

42.How important is Internet access...

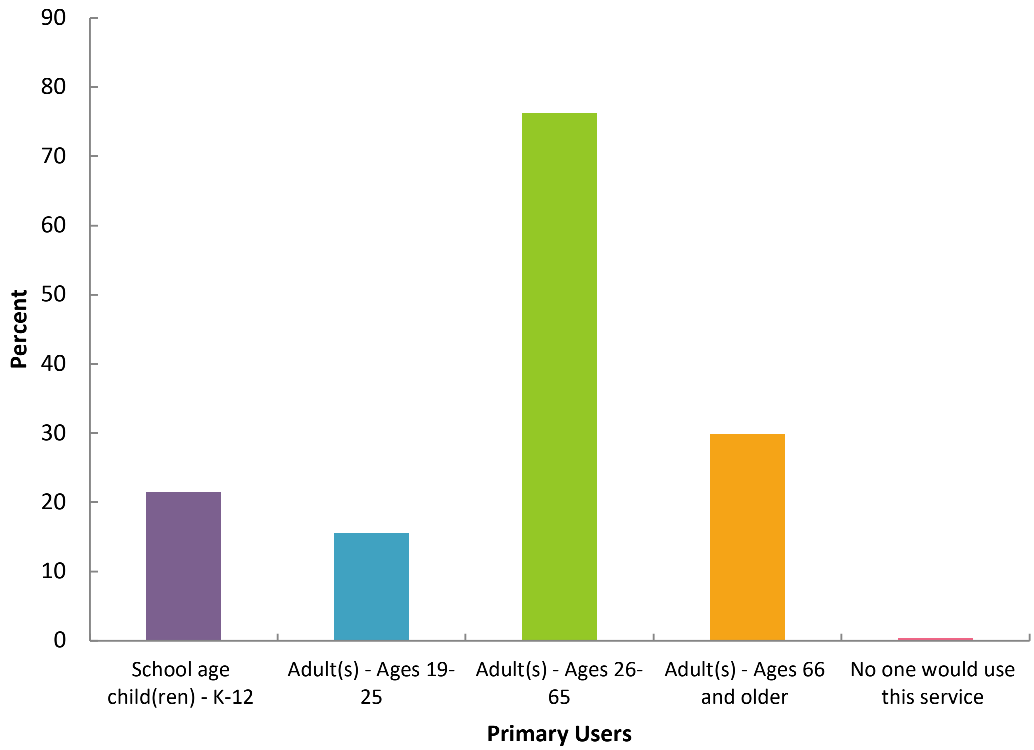
	Very important		Somewhat important		Neutral		Not important		Not applicable		Responses
	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count
to stay in touch?	578	83.4%	79	11.4%	22	3.2%	13	1.9%	1	0.1%	693
to stay informed?	542	84.0%	84	13.0%	10	1.6%	7	1.1%	2	0.3%	645
for your healthcare?	356	55.9%	171	26.8%	76	11.9%	26	4.1%	8	1.3%	637
to your quality of life?	484	75.9%	119	18.7%	26	4.1%	3	0.5%	6	0.9%	638
to your ability to earn a living?	377	58.9%	87	13.6%	80	12.5%	32	5.0%	64	10.0%	640
to your ability to pursue an education?	291	45.7%	85	13.3%	97	15.2%	43	6.8%	121	19.0%	637

43.How many people are in this household?



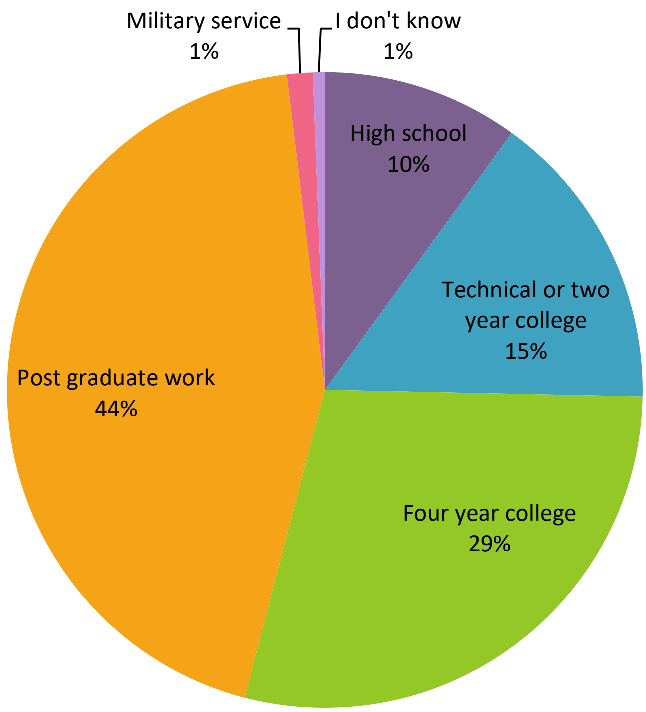
Value	Percent	Count
1	27.0%	182
2	39.1%	263
3	16.2%	109
4	10.0%	67
5 or more	7.7%	52
	Totals	**673**

44.Who are, or would be, the primary users of Internet at your address? (Please check all that apply.)



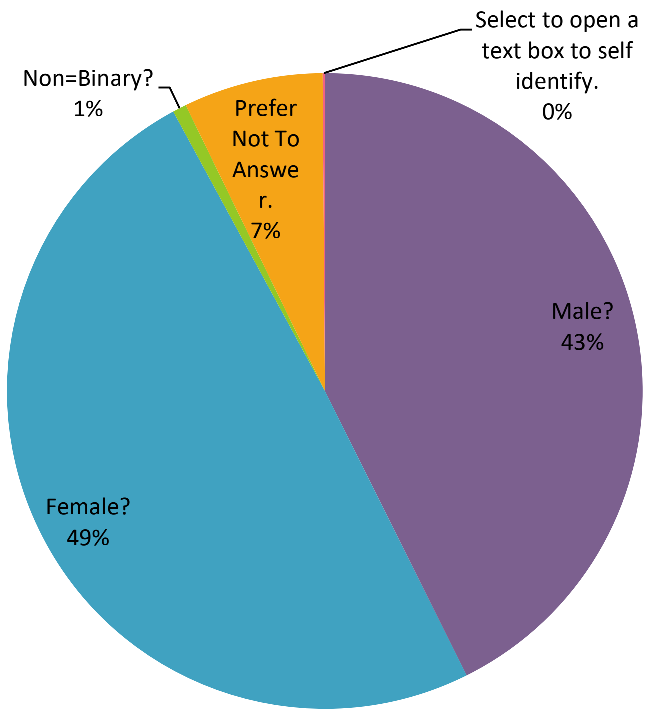
Value	Percent	Count
School age child(ren) - K-12	21.4%	148
Adult(s) - Ages 19-25	15.5%	107
Adult(s) - Ages 26-65	76.3%	527
Adult(s) - Ages 66 and older	29.8%	206
No one would use this service	0.4%	3

45.What is the highest level of education obtained by any one person in this household?



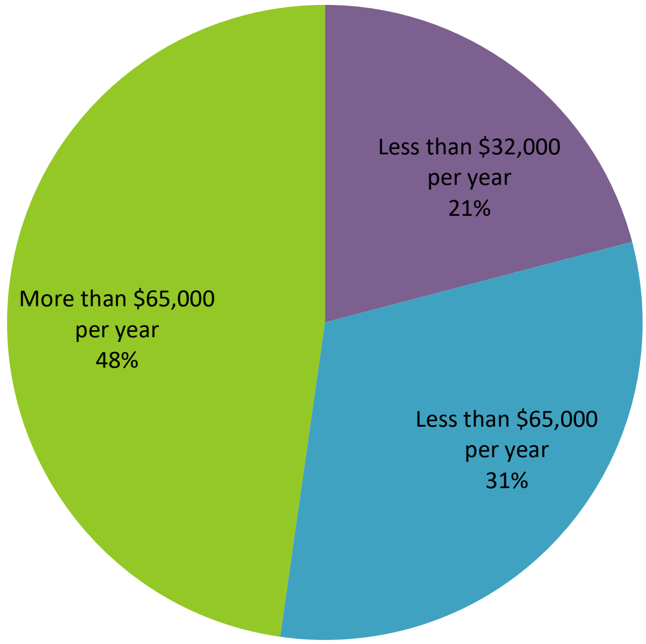
Value	Percent	Count
High school	10.0%	67
Technical or two year college	15.3%	103
Four year college	28.7%	193
Post graduate work	44.0%	296
Military service	1.3%	9
I don't know	0.6%	4
	Totals	**672**

46.Is your gender:



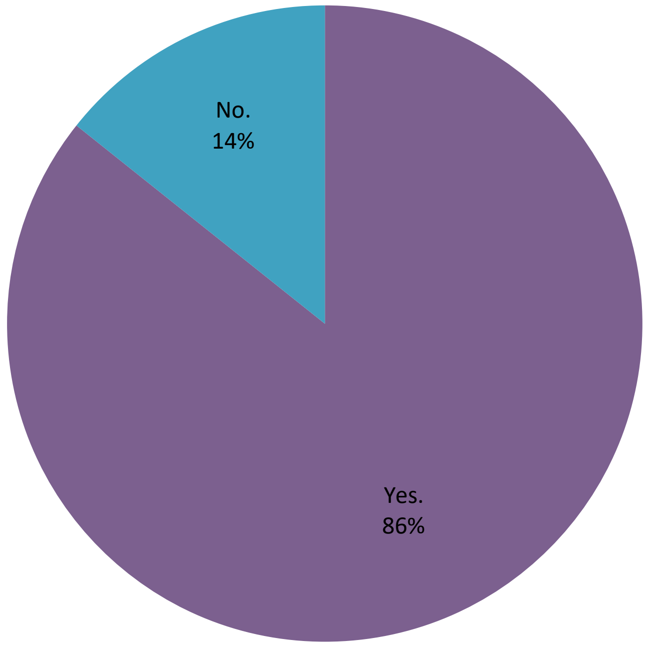
Value	Percent	Count
Male?	42.6%	286
Female?	49.4%	332
Non-Binary?	0.7%	5
Prefer Not To Answer.	7.1%	48
Select to open a text box to self-identify.	0.1%	1
	Totals	**672**

48.What is your approximate household income.



Value	Percent	Count
Less than $32,000 per year	20.9%	133
Less than $65,000 per year	31.3%	199
More than $65,000 per year	47.7%	303
	Totals	**635**

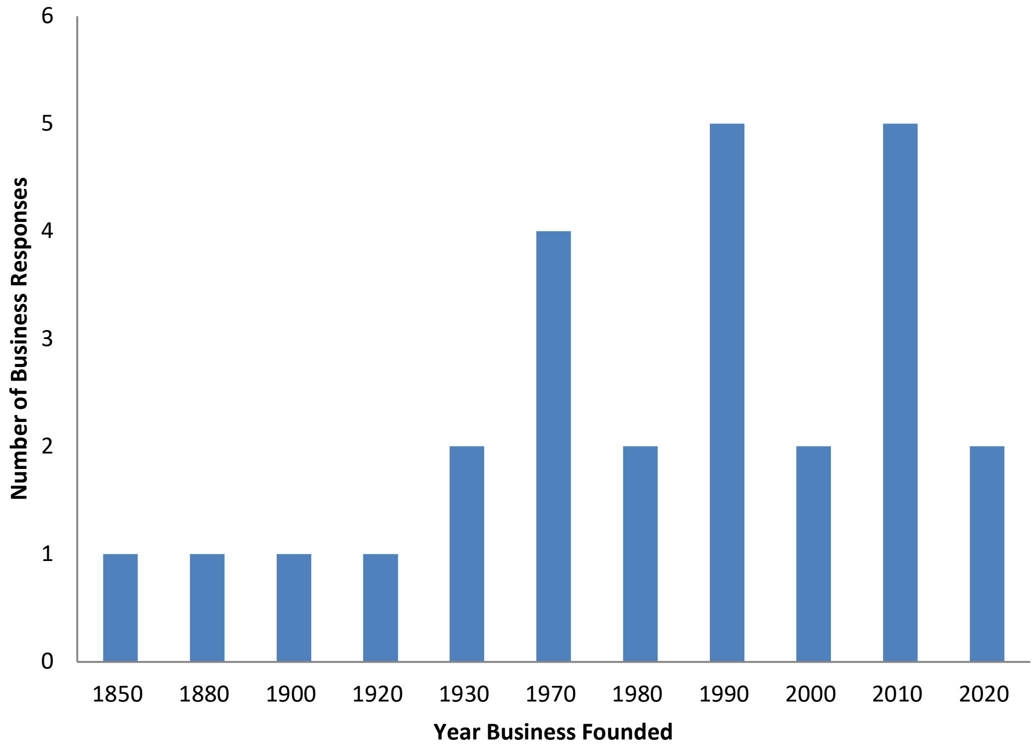
49.If you had the opportunity to receive broadband internet service at a subsidized or reduced cost of $15/month would you subscribe to the service?



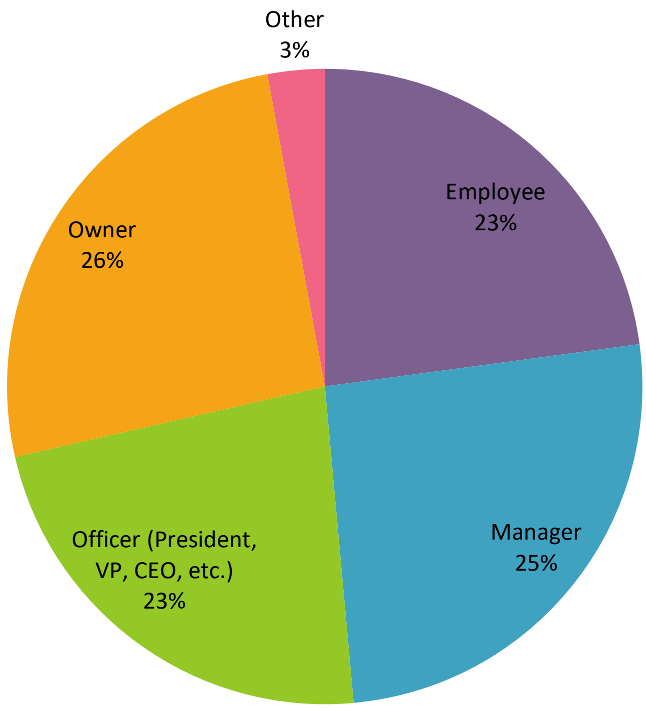
Value	Percent	Count
Yes.	85.7%	6
No.	14.3%	1
	Totals	**7**

2.7 NON-RESIDENTIAL – GENERAL & DEMOGRAPHICS.

50. Non-Residential - Approximately what year did your organization start to operate in Buffalo?

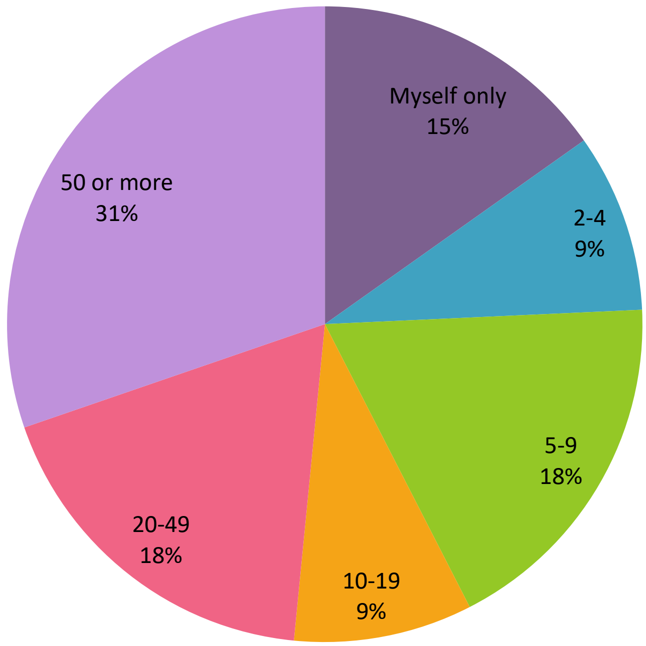


51. Non-Residential - What is your position with the company?



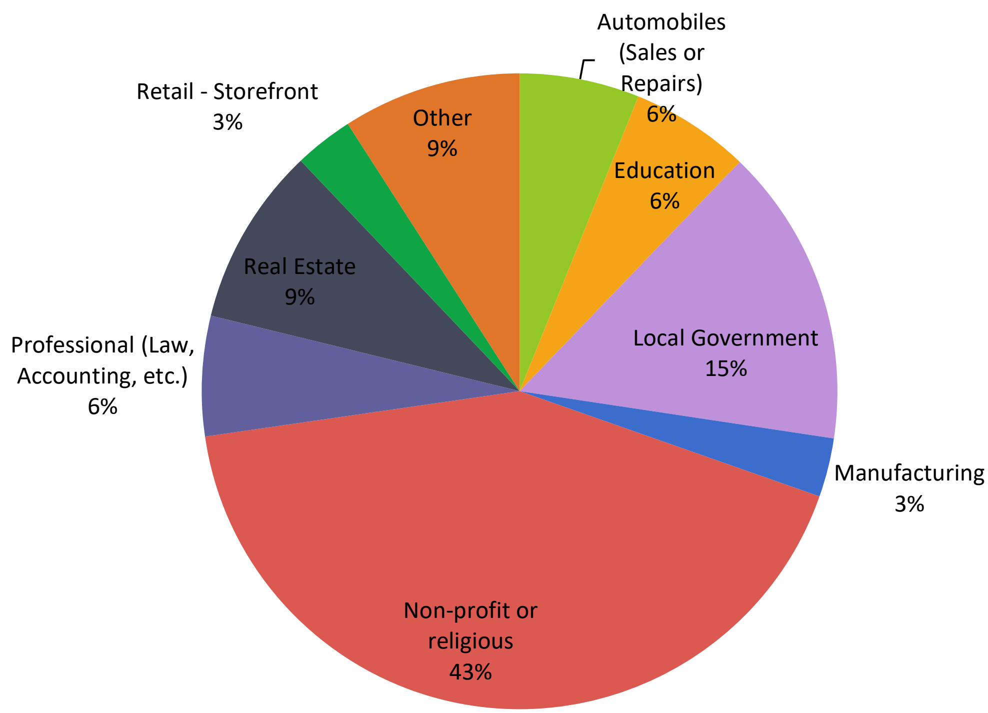
Value	Percent	Count
Employee	22.9%	8
Manager	25.7%	9
Officer (President, VP, CEO, etc.)	22.9%	8
Owner	25.7%	9
Other	2.9%	1
	Totals	**35**

53. Non-Residential - How many people does your company employ?



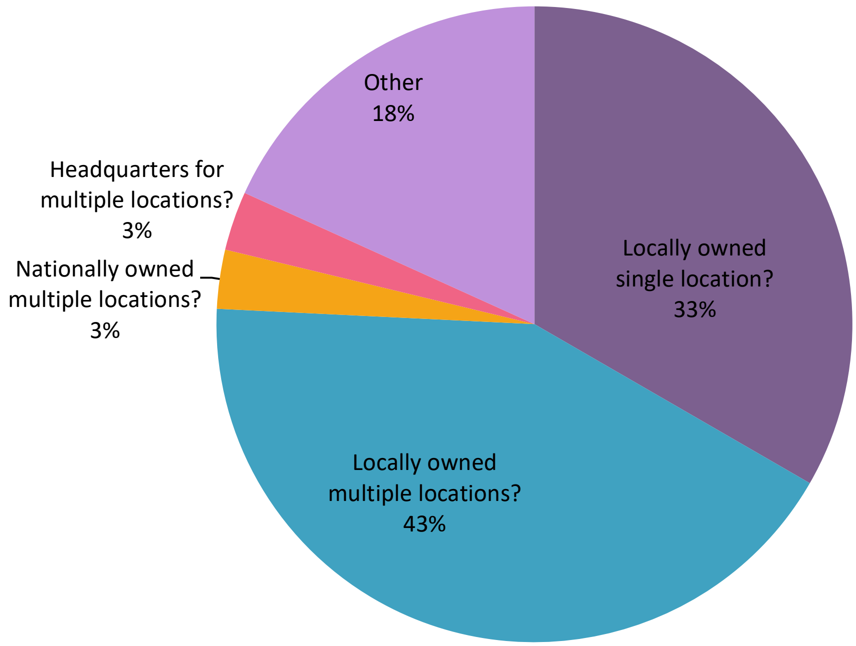
Value	Percent	Count
Myself only	15.2%	5
2-4	9.1%	3
5-9	18.2%	6
10-19	9.1%	3
20-49	18.2%	6
50 or more	30.3%	10
	Totals	**33**

54. Non-Residential - What is the primary line of business at your location in Buffalo?



Value	Percent	Count
Automobiles (Sales or Repairs)	6.1%	2
Education	6.1%	2
Local Government	15.2%	5
Manufacturing	3.0%	1
Non-profit or religious	42.4%	14
Professional (Law, Accounting, etc.)	6.1%	2
Real Estate	9.1%	3
Retail - Storefront	3.0%	1
Other	9.1%	3
	Totals	**33**

56. Non-Residential - Is your company:



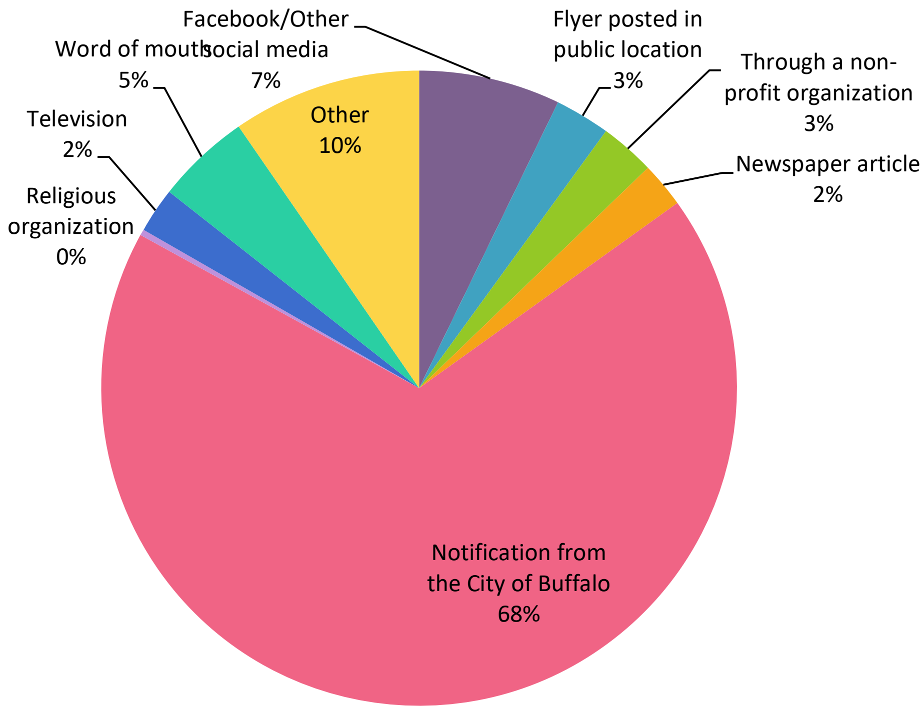
Value	Percent	Count
Locally owned single location?	33.3%	11
Locally owned multiple locations?	42.4%	14
Nationally owned multiple locations?	3.0%	1
Headquarters for multiple locations?	3.0%	1
Other	18.2%	6
	Totals	**33**

57. Non-Residential - How important is broadband access to...

	Critical		Very important		Somewhat important		Neutral		Not important		Responses
	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count
your vendor satisfaction?	18	56.3%	11	34.4%	0	%	2	6.3%	1	3.1%	32
your business profitability?	19	61.3%	7	22.6%	2	6.5%	2	6.5%	1	3.2%	31
efficiency in your operations?	23	74.2%	7	22.6%	1	3.2%	0	%	0	%	31
billing and collection activities?	17	54.8%	9	29.0%	3	9.7%	1	3.2%	1	3.2%	31
your customer/client satisfaction?	24	77.4%	5	16.1%	2	6.5%	0	%	0	%	31

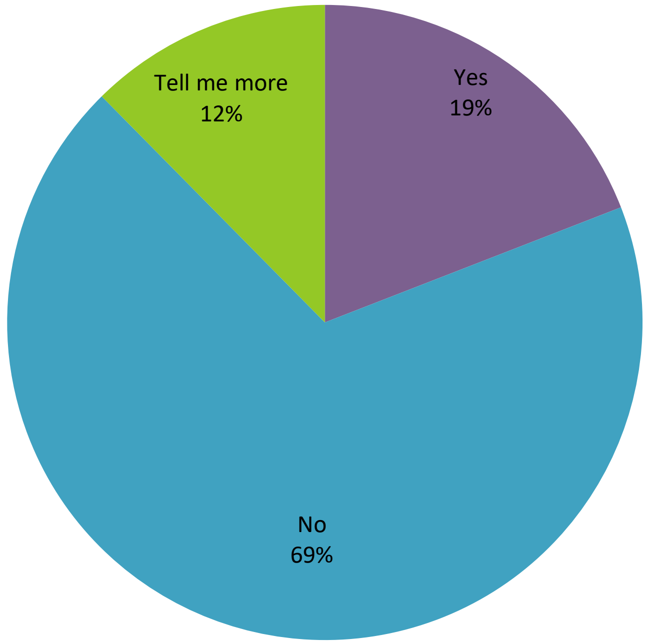
2.8 ALL RESPONDENTS – CLOSEOUT.

58.How did you hear about this survey?



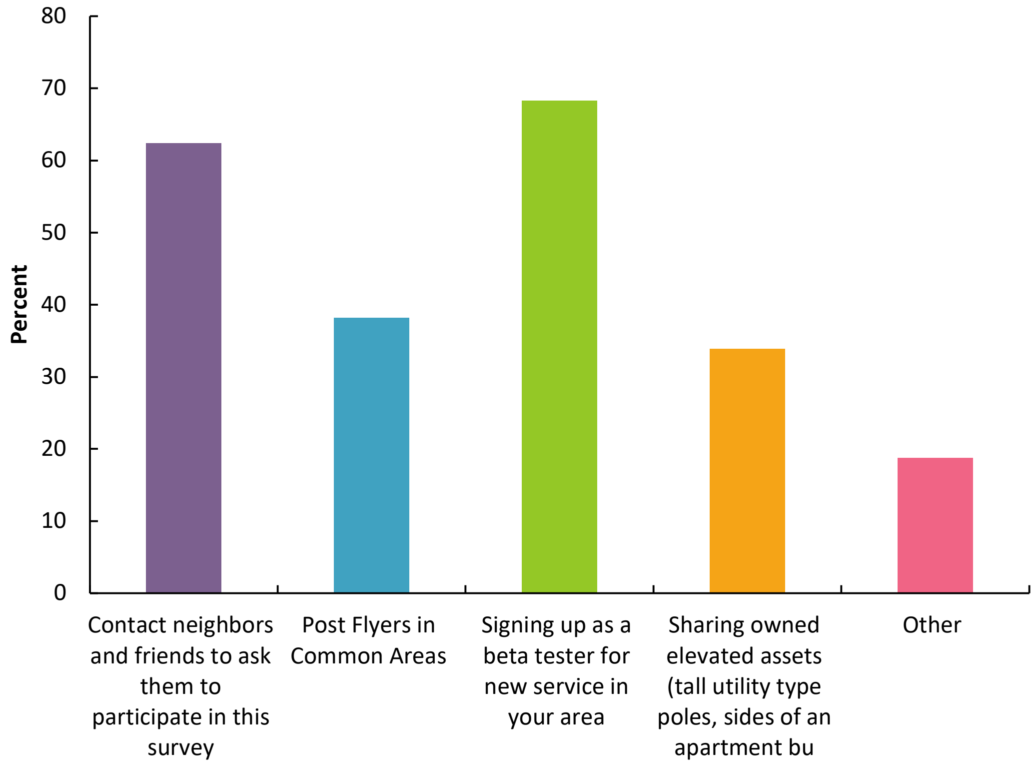
Value	Percent	Count
Facebook/Other social media	7.2%	51
Flyer posted in public location	2.8%	20
Through a non-profit organization	2.8%	20
Newspaper article	2.3%	16
Notification from the City of Buffalo	67.9%	481
Religious organization	0.3%	2
Television	2.3%	16
Word of mouth	4.8%	34
Other	9.6%	68
	Totals	**708**

59.Would you be willing to be a champion for improved Internet access in the City of Buffalo?



Value	Percent	Count
Yes	19.1%	133
No	68.5%	476
Tell me more	12.4%	86
	Totals	**695**

60.Thank you for your interest in being a champion for broadband. There are different ways residents can help efforts in Buffalo. Please click any of the boxes below to indicate ways in which you might be interested in helping!



Value	Percent	Count
Contact neighbors and friends to ask them to participate in this survey	62.4%	116
Post Flyers in Common Areas	38.2%	71
Signing up as a beta tester for new service in your area	68.3%	127
Sharing owned elevated assets (tall utility type poles, sides of an apartment building, etc.) in exchange for upgraded priority Internet access	33.9%	63
Other	18.8%	35

Section 3. How the BAAT Program Works

How It Works. Residents and businesses access a community-promoted Internet site developed and deployed by ECC using devices such as a PC, iPad, laptop, or even mobile devices. The assessment results are valid no matter what device is used by the respondent. Speed test results are not as reliable, even though the instructions on the site advise participants to NOT take the speed test unless they are at their reporting location.

The respondent enters their local address (required for geolocation) and answers questions regarding their current Internet service or lack thereof.

Having conducted many BAAT campaigns over the past five years, ECC has identified, and developed question sets for residential and commercial respondents – both with and without broadband access. The results are statistically valid and feature key insights for County and City decision makers and potential service providers.

Assessment Results. Geolocation based analytics determine where there are "holes" in the response rates, as well as identifying where broadband service gaps are in the community. The BAAT further returns data to allow analysis of obstacles to adoption for residents who already have access to broadband services but choose not to subscribe. It will help determine paths to address those issues—holding classes on computer usage at the library, for instance.

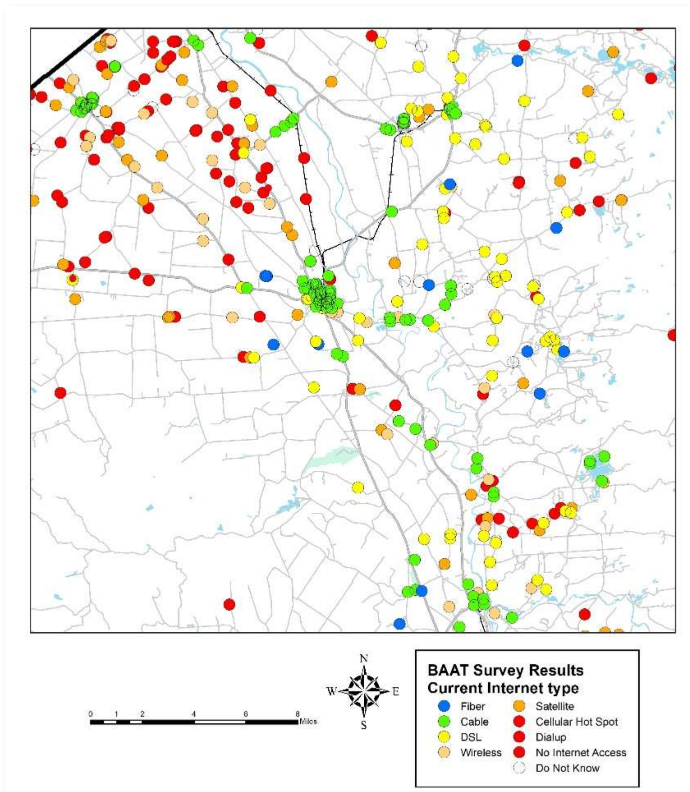


FIGURE 1 EXAMPLE BAAT RESPONDENTS MAPPED

The process uncovers areas that will be profitable to serve for a service provider. It also identifies areas needing future work or subsidy, either due to affordability issues or low population density.

The definitive, specific customer information gathered and documented during a campaign can be used to support further funding/investment for advancing broadband projects. The data can also be used to identify "champions" willing to advocate for broadband efforts within their community.

ECC offers additional value in comparing the responses from the City of Buffalo study with cumulative results from our other BAAT campaigns.   This allows for added insights in evaluating the local results with a larger control group.

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Section 4. Site Analytics

There are multiple statistical components for analysis in the BAAT program. ECC can look at data accruing from the Speed Test and from the Survey. For both components, ECC can identify the ISP server and its latitude / longitude. Additionally, respondent data can also be analyzed including device operating system and revision and browser operating system and revision.

4.1 SPEED TESTS.

Speed test data considers upload and download (or throughput) rates. These rates are not absolute and can vary over the course of a day or even an hour. Various testing servers are called in these tests, and allowances are made for real time processing differences by server to normalize the results for comparative purposes.

The speed test cannot account for issues inside the home or business. Inefficient in-home routing, usage defaulting to an existing Wi-Fi connection - time of day use and device load, are just some components which have an impact on speed tests.

For many of the speed test results, ECC can identify an institutional or carrier-based primary server and can discount those responses as non-representative of the true location-based speed of the respondent.

ECC does not report out individualized speed tests. Instead we look for gross patterns, with particular emphasis on three broad ranges: Less than 10 Mbps download, 10 to less than 25 Mpbs download, and more than 25 Mbps download.

When we evaluate these results, we also examine the browser type, operating system of the device, and the location of the testing server. This enables to isolate speed tests conducted from a cell phone or a tablet as part of our review.

This broad grouping also helps us by creating aggregate data which helps in the interpretation of respondents who have some access to the Internet, though not through a broadband connection.

4.2 SURVEY RESULTS

As previously discussed, the raw data returned from the assessment database includes a variety of information like the speed test in addition to the actual responses. The vital data, however, are the required address components which allow any or all of the assessment responses to be mapped.

4.3 INTERNET SITE

As with the previous two components, there is similar information available at the beginning of the process through the Internet site. However, there is some key information which is useful during the BAAT process for decision making.

Looking at the number of unique visits and pages by day provides insight into the experience of the respondent on the site. Some visitors read the first two paragraphs and click the speed test button – other visitors will read all of the pages including the Legal/Acceptable Use Policy and the Privacy policy.

The web statistics will also track clickthrough so we can count visits to the BURA Internet site, or to the ECC home page.

More importantly, we can see the referring page – in other words, where did the user come from before they came to the City of Buffalo BAAT site. This information was reviewed on an ongoing basis through the campaign

As the campaign progressed, there were additional referral sources as well as search results from Google and Bing.

SITE TRAFFIC.

The following graph shows weekly site traffic:

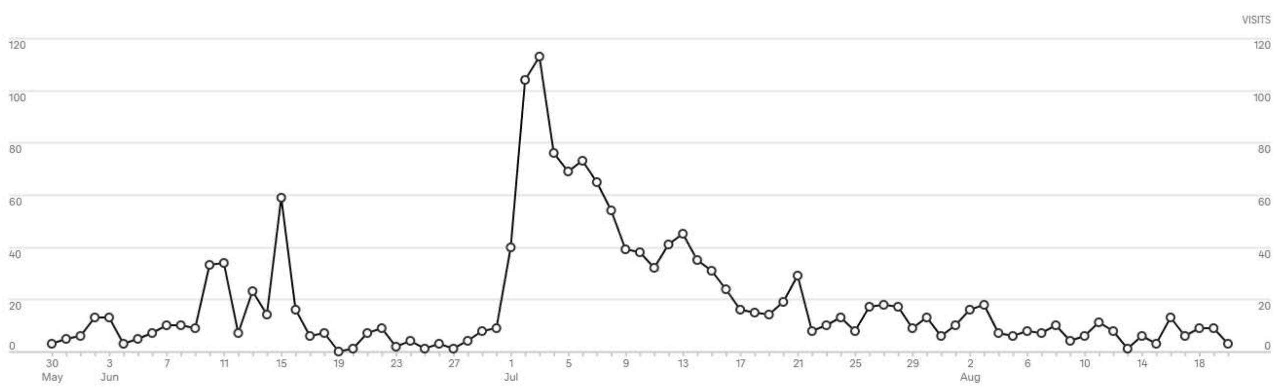

FIGURE 2 WEEKLY SITE VISITS

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ADDITIONAL TRAFFIC STATISTICS.

These graphs show the type of visits by device, where traffic originated from before coming to our site.   The lower graphs show both the browsers and the operating systems used by respondents. This data is also found in the raw data for Speed Tests and for Questionnaire responses.

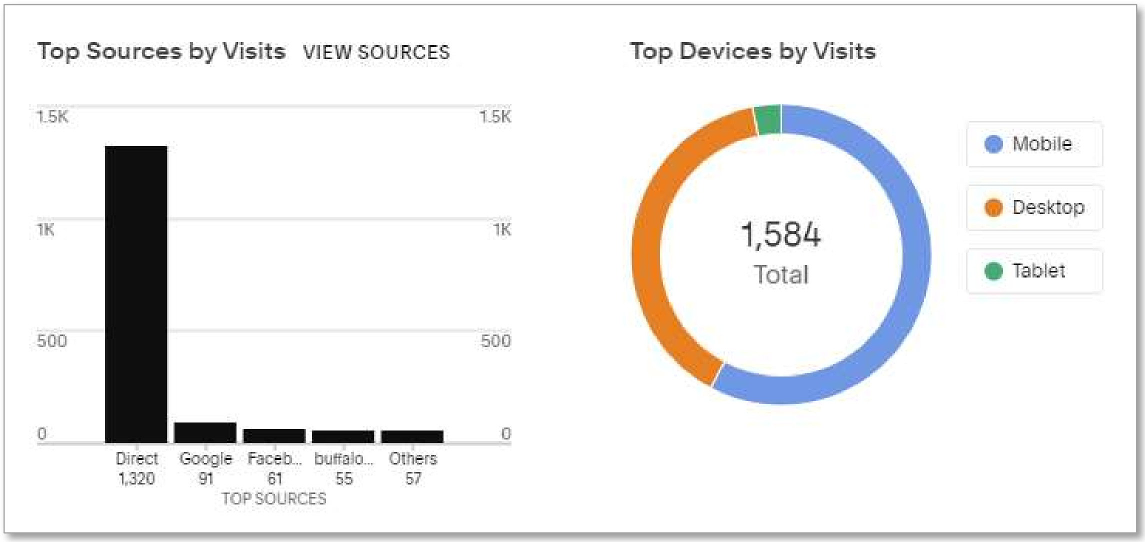

FIGURE 3 DEVICES USED PER VISIT - TRAFFIC SOURCES BY VISIT

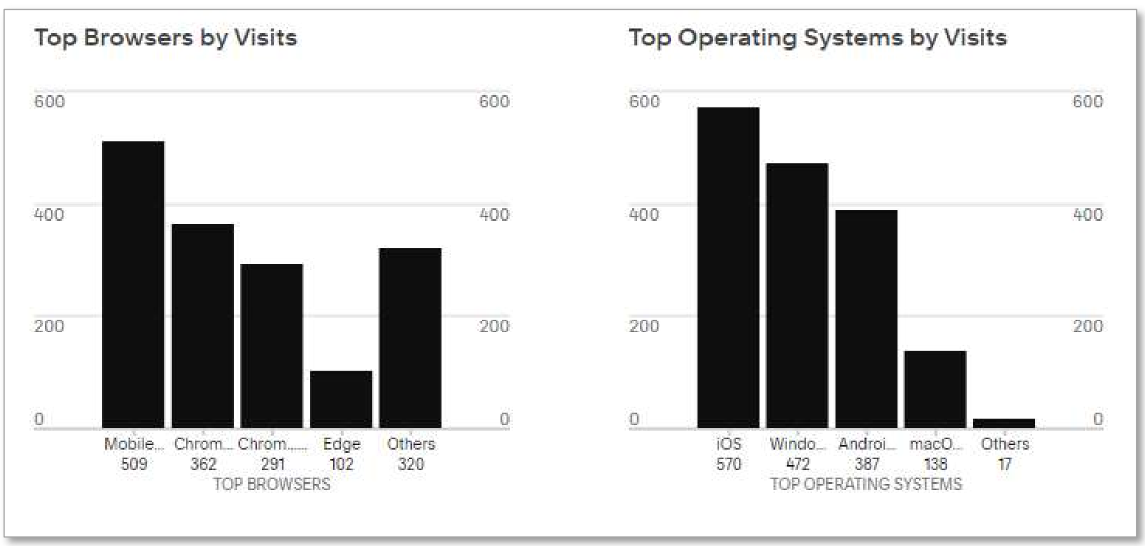

FIGURE 4 BROWSERS AND OPERATING SYSTEMS BY VISIT

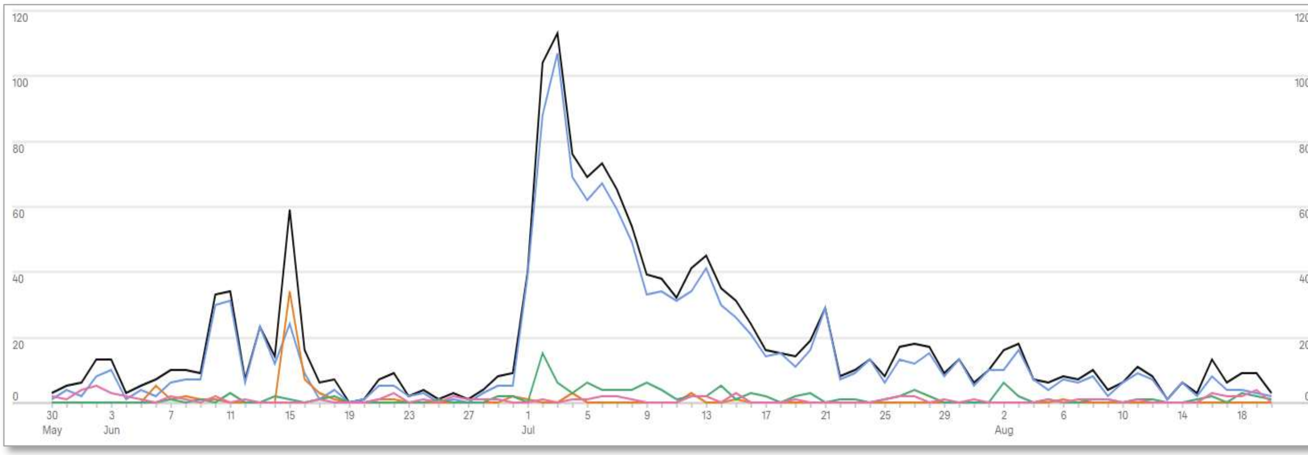

Figure 5 Traffic Sources by Week

Type	Visits	Pcts.
Direct	1320	83.3%
Referral	74	4.67%
Search	122	7.7%
Social	88	4.29%

Table 1 Referral Sources

Type	Visits
Facebook	61
Twitter	7

Table 2 Social Media

Type	Visits
Google	91
Bing	18
DuckDuckGo	9
Yahoo	3
PCH	1

Table 3 Search Engine Referrals

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TRAFFIC SOURCES BY REFERRING SITE.

Type	Visits
Buffalony.gov	55
Bmhahousing.com	10
Nextdoor.com	3
Baidu.com	2
Cato.brightcloud.com	2
Google.com	1
Search.aol.com	1

TABLE 4 REFERRING SITES

TIME ON PAGE.

Page	Page Views	Time on Page
Assessment (Survey)	1001	7:34
Contact Us	10	4:59
About the BAAT	18	4:34
Speed Test	716	1:49
Frequently Asked Questions	29	1:38
Legal (Spanish)	2	1:02
Home	1846	0:48
Legal Policy and AUP	4	0:40
About Us	9	0:31
Home (Spanish)	7	0:08
Contact Us (Spanish)	4	0:01
Home Arabic	0	0:00
Privacy policy	1	0:00
All Other Spanish Pages	1	0:00
Home Page (Arabic Link)	0	0:00

TABLE 5 AVERAGE TIME ON PAGE

Section 5. Respondent Comments

There are multiple ways for a respondent to communicate through the BAAT campaign.

First, there is a listed email address on the “Contact Us” page. By selecting this link, the respondents default email application will initialize on their device. The respondent then creates an email and sends it to the designated contact(s) supporting the City of Buffalo.

The second method by using the form on the contact page. The form requests a first and last name email address and a section for comments supporting a maximum of 32,000 characters. Once the form is completed and the POST process is completed, the results of the form are delivered to ECC via email. On the respondent’s screen, the blank form is replaced by a thank you message.

ECC reviews the inbound communication and discards inappropriate responses and solicitations and forwards the remaining emails directly to the City of Buffalo representative.

The third method is in the actual survey itself – there is a section where respondents are invited to provide comments to accompany their response. This section lists all comments. Please note there are raw comments and have not been edited for spelling, grammar, or language.

5.1 DIRECT COMMENTS

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